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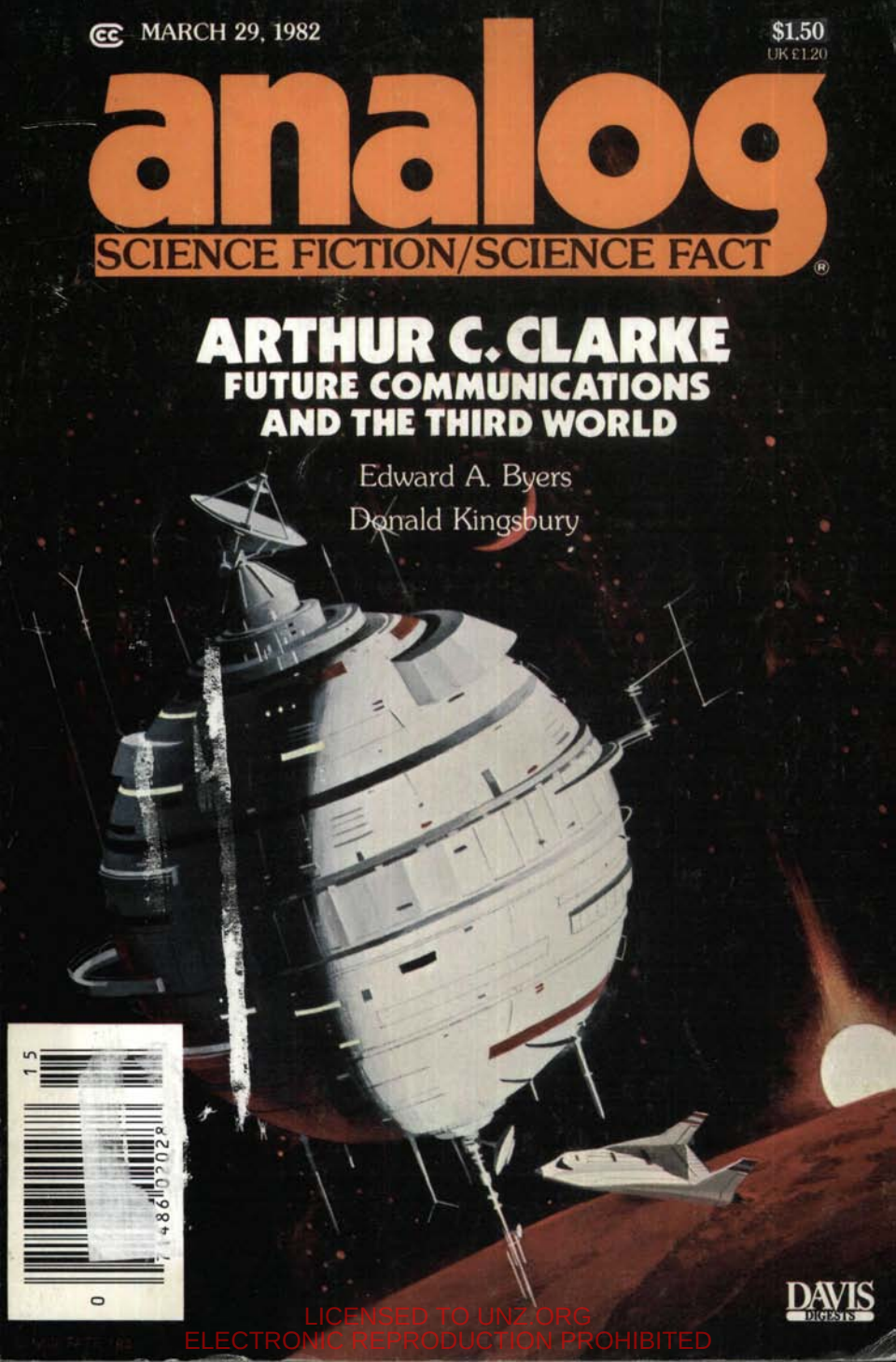

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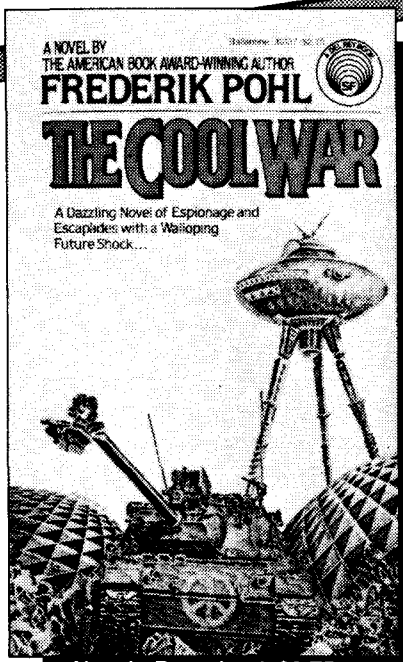
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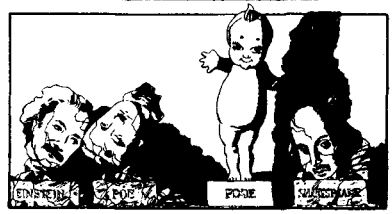

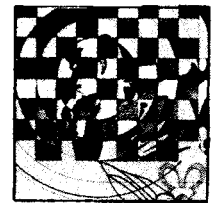

Vol. CII, No. 4
March 29, 1982

Next Issue on Sale
March 30, 1982

$19.50 per year in U.S.A.
$1.50 per copy

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Analog Science Fiction/Science Fact Magazine published 13 times annually by Davis Publications, Inc., at $1.50 a copy. Annual subscription $19.50 in the U.S.A. and possessions, in all other countries $22.75, payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Second-class postage paid at New York, NY, and at additional mailing office. © 1982 by Davis Publications, Inc., all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. Printed in U.S.A. All submissions must be accompanied by stamped self-addressed envelope; the Publisher assumes no responsibility for unsolicited manuscripts or artwork.

Postmaster: SEND FORM 3579 to ANALOG SCIENCE FICTION/SCIENCE FACT, P.O. BOX 1936, MARION, OH 43306

Editorial and Advertising, Analog, Science Fiction/Science Fact, 380 Lexington Avenue, New York, NY 10017

Subscriptions: Analog, Science Fiction/Science Fact, P.O. Box 1936, Marion, OH 43305 ISSN 0161-2328

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REFLECTIONS ON THE ROAD

Editorial

by Stanley Schmidt

As I write this, I've just come back from a couple of weeks of wandering, mostly in Colorado. The main purpose of the trip was Denvention II, the 39th World Science Fiction Convention, in Denver. It was a good convention and *Analog* was well represented, with five out of sixteen stories on the Hugo ballot for short fiction first appearing in these pages. *Analog* stories won the award in two of those three categories: Gordon R. Dickson's "The Cloak and the Staff" was voted best novelette, and Clifford D. Simak's "Grotto of the Dancing Deer" best short story.

A world convention is always fun and stimulating, but it is also wearingly intense. By the time it's over, I'm usually ready for a complete change of pace—and Colorado is a good place for that. So after Denvention, my wife and I, with a couple of friends, disappeared into the mountains and deserts for a week and a half of camping and hiking, interspersed with spells of driving from one area to another.

Travel, they tell me, is "broadening." I'm not sure exactly what that means, but I do know that getting out of your usual surroundings and activities is one of the few ways many people have of getting anything like an objective view of those surroundings and activities. At the very least, it lets you look at your life and the culture in which you live from a different perspective. Therefore, a writer on vacation is likely to find himself frequently jotting down observations suggested by things he sees and things that happen to him on the road. Here are a few of mine, in the wake of Denvention II:

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(1) Idiot lights and signs of the times: One of the most important inventions in human history was writing. It was writing—and its indispensable counterpart, reading—that made possible the transmission of large amounts of detailed information from one part of the world to another and from one generation to succeeding generations. Such transmission is clearly essential to the development of civilization. Writing is not the only method of achieving it; but it is, in many respects, one of the best.

Alfred Korzybski characterized man as "the time-binding animal"—meaning the animal whose effective memory extends beyond an individual lifetime and enables each generation to build on the accumulated knowledge and wisdom of those that went before. The species was time-binding even before the development of alphabets or syllabaries. But the earlier methods were severely limited.

Spoken words were limited to the number that could be recited by the community's old men and memorized by the young—in the time available. But with the short lifetimes and heavy demands on time in a pretechnological society, not much time could be devoted to the piecemeal storage and transmission of information. Furthermore, oral transmission of knowledge is highly subject to cumulative distortion. That's why poetry tended to develop first in most literatures—to facilitate memorization and accurate transmission by locking the information content into a format with a structural framework rigid enough to resist the dislodging of material.

Some information, of course, was recorded in pictures. These were either very literal representation of material objects (such as "buffalo"), and therefore not very useful for highly abstract ideas (such as "whimsicality"); or they were so highly stylized that they were not easily recognizable as real objects, and therefore intelligible only to those educated in their conventional meanings. The latter were, in other words, pictographs: the primitive beginnings of written language.

We've spent several thousand years developing written languages which can express subtle, abstract ideas, and populations educated to take advantage of them. Now we seem to be well on our way to scrapping those and returning increasingly to crude pictographs—and without even bothering to educate the public in their precise use and interpretation!

Cases in point: when the convention was over, I rented a car in Denver. The only quantitative indicators on its dashboard were the speedometer and odometer. All other indications of performance were provided by "idiot lights"—simple yes-no devices, giving no indication of any developing problem until it has become acute—labeled by funny little pictures. Highly stylized pictures, too—most of them I could figure out, at least approximately, but one of them, bearing little resemblance to *anything* I remember seeing in the real world, still eludes me. Once on the road, I found a large number of road signs similarly encrypted. Something that looked rather like a poorly printed Rorschach test, for example, was supposed to mean "Falling Rock." I wonder how obvious that was to a first-time vacationer who'd spent his whole life in a place like Flor-

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ida or northwestern Ohio.

Is all this really good for us? I have at least two serious reservations. One is that these pictographs, being highly stylized but not highly standardized and uniformly taught, do not communicate as precisely or reliably as words. The other is that they encourage the continuing decline of literacy by discouraging people from using it.

We claim to be an intelligent species; let's act like one. We have at our disposal a highly refined, versatile, finely tuned, hard-earned tool: written language. Shouldn't we be using it to do all it can, instead of encouraging people to let it rust and go back to the linguistic equivalent of stone axes?

Why not *say* "Falling Rock"—and require drivers to be able to read well enough to know what that means? I'll even go farther. Instead of an idiot light labeled with a cryptic symbol, how about an *ammeter* (labeled AMMETER!)—and drivers who are taught what that word, and the instrument's readings, mean?

(2) Perspectives: If you spend all your time in or very near New York City, where concrete and asphalt and wall-to-wall people extend for miles and miles with little or no break, it's easy to believe that overpopulation is a clear and present danger to the world at large. If you spend all your time driving around the mountains and deserts of the Southwest, where cars are scarce and skies big and clear and 10,000 people make a teeming metropolis, it's hard to believe in overpopulation at all.

Each of these views is a local extreme. Neither is at all representative of the overall state of the planet. Overpopulation *is* a problem, along with its spinoffs such as pollution—but it is not yet a panic problem, except in certain highly localized spots. Its future development will have to be watched closely and decisions made about it—but there

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is still some time to make them wisely.

But when most people do spend virtually all their time in one local extreme or another, what are the chances of those decisions being made in a rational way, in terms of their effects on the world as a whole? One might even question whether such decisions really should be made by large masses of people, each with a grasp of the total situation not unlike the fabled blind men's understanding of the elephant.

(3) Beauty or beast? I am as opposed as anyone to the unnecessary destruction of natural beauty, but I must note with some amusement that there is a widespread "institutionalized hypocrisy" concerning what *is* natural beauty. In some of the more desolate parts of the West, I have seen landforms shaped by natural erosion which people travel thousands of miles to admire—

—and which, in some cases, look an *awful* lot like strip mines and quarries back East! But in one case it's a natural wonder; in the other, an eyesore.

Some of my teachers used to tell me that a work of art or literature should be evaluated on its own merits, without regard for who did it. I always doubted that they really believed that as deeply as they claimed, and my suspicions proved well-grounded in the case of a certain artist whose "modern paintings" were widely acclaimed—until it was revealed that the artist was a chimpanzee. Then the critics protested —loudly—that they'd been hoodwinked.

To most people, it seems, the name of the artist *does* matter—in nature as well as art.*

(4) The biggest obstacle to mass transit: We're commonly told that we need more mass transportation and less use of private cars. The idea has its points; having had occasion to use a few good mass transit systems (such as the trains in West Germany and Switzerland), I'd certainly like to see more of them available. But I think the idea is going to have an uphill battle in this country, for at least two reasons—both graphically illustrated during my Denvention trip, and both commanding at least a modicum of respect and sympathy.

One, of course, is the greater freedom provided by a personal car. When we were driving our rented car around Colorado, we could and repeatedly did change our itinerary on very short notice, making impromptu side trips to places well off the beaten track or stopping for the night much earlier or later than we'd planned. The extent to which you can do that with a mass transit system depends on how good the system is, but it seems pretty safe to say that it will *always* be less than with versatile personal vehicles. For that reason, I hate to hear people resign themselves too quickly to "the end of the age of the private car." The independence it provides is too valuable to give up without a struggle. It's fine to expand mass transit as an alternative, but it's not the *only* alternative. I would hope to see at least as much effort going into concurrently seeking *other forms of the private car*, to preserve that independence for those who want it.

**Actually, if you are going to take the artist's background into account, shouldn't those paintings have been* more *impressive if done by a chimp than by a human?*

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The other reason for resistance to replacing private with public transportation is a matter of reliability—and credibility. During our time in Colorado, with our temporary personal car, we didn't spend one minute wondering whether somebody else was going to show up when he was supposed to to take us somewhere. When we got back to New York City's JFK Airport, we spent a *lot* of time doing so while trying to get out in the sticks where we live. First it was the airport limousine; we had quite a time even contacting the operator to confirm our reservation. (A "courtesy phone" was provided—but would you believe somebody had the brilliant foresight to put three limousine companies on one party line at one of the country's busiest airports?) Then it was a taxi from the limousine stop to home, which promised to come in "a few minutes" but actually left us standing in the cold for over half an hour. We could have used a train plus a bus instead of the limousine, but we gave that up after the time it got us to LaGuardia Airport two hours late the night before Thanksgiving. (We were lucky that time—the plane was late, too.)

Get the picture? Public transportation is fine *if* it goes where you want to go *and* it's fast, frequent, and reliable. Too often, at least in this country, it hasn't been. So often, in fact, that many people would rather drive their own cars than depend on other people. If you want them to do otherwise, you're going to have to convince them that mass transit will be *reliable* in the future—and the worse its past performance has been, the harder that will be.

It's true that when you drive your own car, you're still subject to delays due to mechanical breakdown. But somehow that seems psychologically easier to take than the failure of so-called transportation professionals to deliver what they've promised and been paid for. It's easier to forgive a machine, because it can't help it if it breaks down.

People, in general, ought to know better. ■

A NOTICE TO ANALOG READERS:

1982 will be The Year Without An April, for *Analog*.

We're returning to a monthly dating system—our circulation department informs us that magazines carrying "month" dates tend to stay available longer on the newsstands—and the next issue of *Analog* will be dated "May." We'll continue to publish 13 issues annually. Twelve will be dated "January" through "December." The thirteenth—which will, of course, include the regular selection of stories and features—will bear a different designation, yet to be decided upon. So, to repeat: There will be no *Analog* dated "April" this year. "May" through "December" will follow, plus an additional *Analog* sometime this fall. Enjoy!

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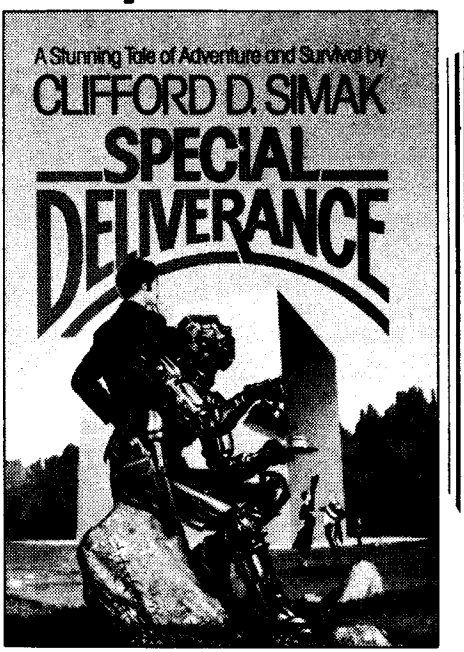
Among the creatures of the vast universe, how important is man?



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Edward A. Byers

VIRGY

Who is a person?
Too often
the question is
taken to mean,
"Who was
that person?"

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Something was troubling me. I didn't know what it was. Pointless, I suppose, to remark upon that fact, given the circumstances. On the order, say, of worrying about leaky water faucets at your own coronation.

It wasn't a coronation, though, it was a graduation: mine. The air was brisk, clear, the leaves of late spring opened out full on tall green trees. Baltair's sun was bright, almost overhead, lacking only a degree or two of arc to make it noon. I stood in front of the dais with the others, eyes straight ahead, back rigid. There were thirty-three of us, all that remained of an original ninety-two. We were survivors, all, and we wore blue silk and black leather, the mark of our new rank.

There was sudden movement; my cousin Amanda crossed my line of vision. She smiled. In ten minutes more we would be cousins no longer, but something closer. Sisters. I would be, like her, a Helm Maiden.

Not an easy thing to be—seven years spent disciplining my body, hardening it, learning to make of it an instrument of my will. Seven years of unrelenting labor, of never-ending competition and challenge. And command, for a helm is not alone a symbol of conflict, but is also that which steers the vessel.

Those moments standing there should have been exalting, the culmination of a long-sought dream. But other things kept going through my head. Things suppressed, just now rising. Why now, I wondered—at this moment of achievement? They were thoughts of my mother, of the crazy man on Doubab, of the black fugue. They were thoughts of myself back on Sorbonne, just turned thirteen and half crazy in love with Amanda. Half crazy in love with an idea. Half crazy . . .

It was four o'clock in the morning when Amanda woke me. We went to the *aréne* through pelting rain, lightning off to the south strobing like gunfire. Sorbonne weather, for sure. Inside, shedding water, Amanda deVere looked at me, at my drowned-rat expression. She stroked soggy hair out of my eyes.

"You want to be a Helm Maiden, Virgy?" she asked.

I held my breath. "Yes."

"You know your mother objects."

"Still," I said hoarsely. "Father . . ."

Amanda shook her head. "Your father is dead. And it makes no difference that he wore silk and leather. It is your mother who must be convinced."

"If he were alive he would sponsor me," I said.

"Of course." There was a pause before she spoke again. "He was one of the good ones. And he died as Helm Masters should—on duty. But now there is Frieda . . ." She paused again before nodding in the near darkness. "*I* will sponsor you. That is why I came. But it takes work, you know. Much work—endless work." She turned on one of the spotlights, illuminating the center of the arena floor. Her cloak fell away, revealing structured body armor. "Watch," she said. She activated one of the mock-lifes, a six-legged creature the size of a small pony. At the end of each leg were tubular stingers. Amanda adjusted the settings so the thing bobbed and weaved like a punch-drunk bantam weight. "It can kill at this level," she said quietly, and moved to give it room.

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The mock-creature immediately began to stalk her, the lenses of its eyes glowing darkly, its legs making sharp clicking noises on the floor.

Amanda circled, her motion controlled precisely by the placement of arms and legs. It smacked of choreography, and only later, when you saw the steel spurs and hand spikes, was it apparent it was something else.

The moment burned itself into memory, an imprinting as sure as a baby chick for its mother. Amanda, her helm and armor glowing softly in the cone of light. Amanda, lithe, supple, stinging death at the end of her fingers. *Helm Maiden—Ai!*

The mock-life made its attack at the far side of the arena, scuttling like a mad tap dancer to cut off Amanda's retreat. But she did not retreat; she feinted left, and then her movements became blurs too subtle and too many to follow.

In the first moments she crippled the thing, shearing away two of its legs. She stood back, studying it, then moved forward for the *coup de grace*. It tried once more, feebly, to attack, but Amanda was too fast, her movements too sure. When it was finished she left the remains on the arena floor and came toward me.

She said, "If that seemed easy to you, don't be deceived. The mock-lifes have been programmed to learn from their mistakes—someday I may lose one of these fights."

"Never!"

She smiled at my vehemence, then waggled her eyebrows to make a joke of it. She removed her helm and placed it beneath her arm. It was made of silver and iron. From its peak flew a blue streamer.

She said, "I will talk to your mother. She tends to be obstinate, but I've never known her to be intractable." She removed her gloves, tucked them into her belt. "It *is* what you want, isn't it? Be sure of that."

I met her gaze, grinned then, and nodded. "Yes," I said. "It's what I want—more than I've ever wanted *anything!*" On impulse I took her hand in both of mine, and squeezed.

She squeezed back, and grinned, too, her mouth turning up at the corners in shared delight.

"Come on, then," she said. She shook herself free. "It's back through the rain for us. And you have to dry yourself and get to bed. It won't do for Frieda to catch us making plans she's not consented to."

I look more like my cousin Amanda than I do my mother. In fact, Mother, alone, of all the deVeres, is the smallest, softest, most neutral-seeming. And it doesn't help that her wardrobe consists only of white surplices and matching hoods. Of course she's a deVere by marriage only. Most of us are like Amanda: tallish, slender, auburn-haired, with the typical long face and green eyes. I'm like that, too, except I'm skinnier, and have no breasts to speak of.

My mother is a disciple of The Shining Light, which explains her surplices, her retiring manner. It's a contemplative religion that dotes on "inner understanding." And it's a fringe group, pacifistic, low-key. The disciples on Sorbonne number less than thirty.

"The fugue line passed Barnard's star

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during the night," Amanda announced at breakfast. "That cross-checks speed-of-light." She took in a mouthful of eggs and raised her eyebrows at us both.

"I thought they had determined that already," Mother said mildly. She scarcely looked up.

"They had," Amanda said. "But this ties it down—there hasn't been a variance in over a year."

The fugue—the Black Fugue, they call it—though of course it's not really black. It is, in fact, no color at all. What it is is an ever-expanding line of . . . well, not light exactly, but *something*, that is passing through the universe—or through which the universe is passing, no one is really sure which. It used to frighten me, before I realized that at speed-of-light the fugue wouldn't reach Sorbonne for almost eighty years. Time enough then to get worried.

The effects of the fugue are pretty well established, though there is some disagreement on the fine details. Simply put, it causes ferality in intelligent life. Which, of course, includes humans. More succinctly, it means a loss of higher-level logic, a retreat to primitivism. It means, in fact, an abrupt plunge into a mental Pleistocene. No guesses yet as to cause. God, maybe, or some higher physics, depending on your view.

"Have you thought any more about Virgy's future?" Amanda asked, switching subjects. She had taken a two-month furlough to be with us, a furlough that was nearly (and much too soon) half over.

It was Mother's notion that while I might not be a good candidate as novitiate to The Shining Light, I *was* reasonably bright, and ought not to waste myself in aimless pursuits. She sipped tea while she thought over the question.

"I'm going to enroll her in the Academy at Laerdes," she said finally. "I know several of the faculty there."

I opened my mouth to protest but Amanda threw me a *shut-up* look. Her brows drew together. "Is that what *she* wants to do, Frieda?"

Mother smiled and gave me a fond look. But then she spoiled it by saying: "When I was thirteen, I was certain I knew what I wanted to do with the rest of my life. But I didn't—and not for many years after."

"But I *know*," I said. My stomach lurched. "I want to join the Order of the Helm."

Mother was silent for a moment, her teacup halfway to its saucer. She set it down finally and gave me a level look.

"Life is full of uncertainties, Virgy," she said not unkindly. "You would do better—much better—to diversify your talents."

"Meaning what?" Amanda said disgustedly. "That life's a crap throw? Well, hell—there's nothing new in that." She paused. "And anyway, there's no better survival training than what she would get in the Order."

My mother gave a headshake and my heart sank. She said, "The Order would train her to do two things well. Command—and kill."

Amanda snorted. "Don't be simplistic. We're not reflex-trained traffic cops. And of *course* we'll kill—if other options are taken from us."

She was referring to the fact that the Helm Order opened up new stargates, pushed the frontiers back. Sometimes,

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in the course of that expansion, they met creatures inimical to their passage.

Man, as a rule, won those disputes.

Mother listened, hands folded serenely on the table top. Somewhere close by, thunder grumbled and hard pellets of rain rattled the windows. Sorbonne summer.

"Every person has a place that is right for them," Mother said philosophically when Amanda was through. "And every place has its time. If Virgy is to be a Helm Maiden that will come to pass. But I will not sanction it nor . . ." And she stopped in mid-thought and gave a little shrug, her eyes brooding over some uninterpretable inner vision. Almost absently her fingers sought and found her prayer beads. I looked at Amanda in dismay. When Mother put on that martyred gone-away face there was not the faintest hope of changing her mind.

But Amanda didn't know that. She leaned toward me, patted me lightly on the head. She said, "I'm not through yet, Virgy."

The disciples of The Shining Light met each week in the largest *maison*. They sat in rows like identical white partridges and meditated, the men (of which there were nine) indistinguishable from the women. And it was thus, Amanda told me wryly, watching, that they shed their revealed light upon Mankind. Hearing her say that made me uneasy. Despite her cynicism, there *had* been a man called The Shining Light.

His real name was Titus Wilde, but his followers changed it to Setsen Dai, which translates to "The Light that Shines." It's all kind of like a legend, though it didn't happen that long ago. Before I was born, of course. Even before Mother was born.

The first stargate was built by aliens. Pan Kirst, the scourge, the man they called the world-assassin, figured out how to operate it, but only Titus Wilde could use it. Mother says that's because it let through only the pure of mind.

As a result Kirst wanted to destroy the Gate. The Shining Light intended to preserve it. They met on a mountain top and fought. They killed each other; Titus Wilde giving his life so that Man might have the stars. His body was removed and honored, but Kirst's was buried in an unmarked grave. And whatever else Amanda thought, I'd never heard anyone deny *something* like that happened.

The Disciples revered Setsen Dai for other reasons, however, least of all for his heroic death. Mostly it was for the concept of *ürolt* love, the love that spreads outward from the heart and mind and encompasses everything that lives. Cosmic love, unreserved and eternal. The Disciples believed in outward love and inward understanding, the twin concepts of The Shining Light.

There was talk at the meeting of the fugue line. And afterward, just before going to bed, Mother said she was making a pilgrimage to Doubab.

It startled me. Mother had never been off Sorbonne in her life, except to attend the university. Certainly not to a world so obscure that I'd never even heard of it.

I said, "Where's Doubab?"

She removed her surplice and put on a simple nightgown. Her hair was brown,

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cut short, left uncurled. Streaks of gray were visible in it.

"That's its real name," Mother said. "The name it was given when it was first discovered. You know it by the name we call it now. The Crown World."

I said, "Oh," and shut up. That I *had* heard of. It was the world of legend, where The Shining Light had died. There was supposed to be a shrine there, a single small memorial cut into the side of a mountain.

"But why are you going *now?*" I asked, and thought about Amanda. Her furlough would be over in another few weeks. If we could not sway Mother in the time remaining, I would never be a Helm Maiden. My throat constricted wildly at the thought.

Mother ran a comb through her hair before answering. "It's the fugue line," she said then. "It's less than a light-month from Doubab. Unless I go now I'll never see the shrine."

I bit my lip. "Can I go with you?"

Mother put her comb away. If she was surprised she didn't show it. "If you like," she said. "But there's not much there that would interest you. It's only a mountain on a rather dismal world." She paused and looked at me. "And it's winter there."

"Still," I said. "I'd like to go."

She came close and hugged me, smiling, brushing my forehead with her lips. She said, "Of course you can come."

I drew back a step. "And Amanda?"

Mother shrugged, dismissing the subject. "If she wants to. Now go to bed. *Ajol*, my child."

Ajol—it meant may you find peace in the universe.

I woke up in the night and lay there, listening to the Sorbonne winds, the occasional sharp drum roll of thunder. Something was bothering me, burrowing up from my subconscious. Only later did I realize what it was. Guilt—for plotting like a traitor.

It never occurred to me that Amanda might not go. When I found her next morning she was honing the nicked edge of a spur, her hair pulled back into a pony-tail and fastened with a gold clasp. She wasn't happy to hear of Mother's plans.

"When is she leaving?" she asked.

"Day after tomorrow," I said. I marveled at the care she gave her task. The spurs were four-inch scimitars of steel. Amanda had used them in her duel with the mock-life, employing them as curving talons to rip and tear. She finished one and laid it gently back into her weapons case, then picked up its twin and inspected it critically.

"I'm not sure," she said, "but I think Doubab is very close to the fugue line."

"That's why Mother is going," I said. "She wants to see the shrine there. You know, The Shining Light."

Amanda nodded. She peered closely at the spur, detected a minute flaw. She picked up the hone.

"Do you know where Montargis is?"

"Yes," I said. "It's over the mountains. I was there once, at a Disciples' meeting."

"And do you know a woman there they call the mad witch of Montargis?"

I shook my head as Amanda laid the second spur gently beside the first. She closed the case and set it by her side.

"There is such a woman. She was wife to a Helm Master." Amanda

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paused, and then shrugged. "In matters of love we are only mortal," she grinned sardonically. "He died on Dhorpur, about six months ago. His effects were sent here to Sorbonne."

When I looked puzzled, Amanda said: "His weapon case belongs to the Helm Order, Virgy. It should have been returned to us. But this woman . . . this *mad witch* . . . refuses to part with it."

"Oh. And you have been sent to get it?"

She nodded. "The Order knew I was coming here on furlough. They asked me to stop and pick up the case." She gave me a level look. "I must do that, even if it means I cannot go with you and Frieda."

I stared. "You must! Only you can convince Mother that I should not go to Laerdes!"

She bade me sit, and laid a hand gently on either shoulder. "As long as that case rests in untrained hands, Virgy, there is danger of catastrophe. Not of someone actually getting to the weapons within—that is virtually impossible—but of someone *trying* to get to them." She gave my shoulders a squeeze. "That case . . . and this one," she indicated the one by her side, "are booby-trapped. *Death*-trapped. My first priority is to recover that case."

"And the mad witch . . . ?"

". . . was not in Montargis until this morning," Amanda said, finishing the sentence. "I asked the mayor to call me when she returned. He did so an hour ago."

I thought about it. "Montargis is not really that far. Perhaps you can go and return in time to go with us."

"Perhaps," Amanda said. She gave me a lop-sided smile. "And perhaps you can persuade your mother to delay her trip until the next shuttle."

I sighed. Easier to ask that Sorbonne stop her rains eternal. . . .

That day was a quiet day. And the next. Amanda did not return and Mother packed her bags for the coming trip. I packed too, and wished the clocks would stop—for an hour—for a day.

"Take warm clothes, Virgy. It's cold there, the winds will cut right through you."

"You said there was a hotel," I said in protest.

"A lodge. And apt to be only a shell after all this time. No one lives on Doubab anymore."

I looked at her. "Why not?"

"Because it's a barren world. Drab, unattractive—more a prison than anything else—so say the disciples who've been there." Mother sat both of her bags on the floor. "Its only distinguishing feature is The Mountain of the Crown, where the stargate used to be."

She meant the alien one. There was a Gate on Doubab, of course, put there by human engineers.

That night the sleep I got was fitful. I dreamed I killed the mad witch of Montargis.

Amanda joined us just as we were leaving the *maison*. She looked haggard, but she was smiling, and she bore a second weapons case beside her own.

"You can't have slept or eaten," Mother said, looking at her red-rimmed eyes. "Come in. I'll fix you breakfast."

But Amanda shook her head. "No

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time. I can eat on the way. The shuttle won't wait."

Mother didn't insist. She adjusted her surplice and picked up her bags.

Amanda turned her head to look at me and gave me a wink. She said, "If you don't stop grinning like that you'll run out of them by the time you're fifteen."

That stretched my cheek muscles more. I said, "How is the mad witch?"

"Madder than ever," Amanda said.

Our stargate was located just off the orbit of Sorbonne's smallest moon. Shuttling up to it was the longest part of our trip; it took almost two days. The window through to Doubab was just opening.

Amanda explained to me that everything that has planetary mass has a *locus*. That's the jumping-off point, the only place where a stargate will work. The trick is in finding it, teasing it out mathematically from the literal mountains of data that have to be compiled. And because planetary bodies accrete mass all the time from meteorites and space dust, *loci* have to be refigured continually. They shift.

Those periods right before the shifts take place are windows to other worlds—to *loci* in other parts of the universe.

Doubab's *locus* was on top of Crown Mountain.

"Well, it's liveable, but hardly the Elysian Fields," Amanda said, coming out of the exit portal. She indicated the rolling edge of low-flung mountains, pointed down into the valley where shadows hunkered like somnolent dwarves. On the mountain, a cold wind was blowing, and above the sky was gray, like fresh-washed slate. The faint warmth of the sun was only a tangential glancing force.

Mother gave it a pensive look but made no comment. Her mind was elsewhere. She moved past Amanda and scanned the rock face jutting above us. Her fingers touched the ochre-colored stone in a tentative way. She ignored the wind.

"It happened here, did it?" Amanda asked.

"Yes," Mother said.

"Where's the shrine?"

"Further down, along the curve of the rock face." She pointed to our left, into the teeth of the wind.

We moved that way. I was cold, and still disoriented from the sudden change of scene. I drew my cloak around me tightly.

Halfway around the curve Amanda noticed the three-foot-wide depression that marched with us. She stopped and knelt and brushed away its mantle of hard-packed snow.

"That's where the Crown rested, before it was cut up and hauled away," Mother said. She had stopped too, but her eyes did not. They followed the depression line as it curved back against the rock face.

"That would have been Morgan," Amanda said. Morgan was the engineer who had taken the alien artifact away.

"Yes," Mother said.

We followed the track. At its end was a grotto, tiny, snowfilled, as humble in its intent as the Disciples themselves. Mother cleared away the snow, oblivious to the cold. Her efforts revealed a

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bust—the head and shoulders of Setsen Dai, the man known as The Shining Light.

It was a friendly face, and wise, though by no means all-knowing. The eyes were deeply sunk beneath the brow. Taken altogether he looked somewhat like an owl. There *was* power there, though, and something else. Trust, I thought—it was the face of a man you could trust.

Amanda must have thought so, too. She drew off to one side and studied the sculpture through questioning eyes. Her helm gleamed in the half-light, and the blue streamer caught the wind. After some moments she lifted her gaze and regarded the surrounding mountains. They were mist-covered, glacial, locked in winter's death-grip. Abruptly, involuntarily, she shuddered, then caught my eye and gave a little shrug.

"Something about this place," she said defensively. "It seems somehow . . . ominous. Spooky."

I felt it too, and looked at Mother. "I'm cold," I said. "Where is that lodge you said was here?"

"In the valley. Just at the mountain's base." She walked to the plateau's edge, looked carefully, pointed.

The floater we'd brought took us down to the lodge, an empty cold place with a hand-built hearth and huge high windows that looked out on the mountain.

"It must have been a lonely life, running this place," Amanda said. She ran a finger along the mantel and disturbed two decades' worth of dust.

"His name was Rowan," Mother replied. "The man who owned this lodge. Probably he didn't think of it as being lonely."

"That's right," Amanda said after a second. "Kirst was here, wasn't he? He had the company of the world-assassin."

"I suppose so," Mother said. "The trouble is, there's not a great deal known about Rowan. Except that he came from a prison colony. Blanchot, I think it was."

"That was a maximum security prison," Amanda commented dryly. She opened the dampers of the fireplace and turned to look at Mother. "It begins to appear that they were well suited to each other."

Mother shrugged and stared out of the window before answering. "He seems to have been a decent man," she said at last. "Not a violent one, like Kirst."

Amanda and I gathered scrub, and we lit a fire in the ancient hearth. There was a table there in the common room, a massive thing of leaden-colored wood. We sat at it and drank tea and pondered our futures. The futures of Man, and the larger Futures that mark the turn of the universe. Sitting thus, before the roaring fire, we watched darkness descend. It came quickly, as though a curtain were dropped suddenly over the mountains. Doubab, it turned out, was very black at night. No moon. Only a cold reef of stars above and the faint white glimmer of the slopes.

Just before turning in, Mother pinned a calendar up on the wall. It was blocked off in days, showing the windows that led from Doubab back to the stargate on Sorbonne. There were many of them, but at the eighteen-day mark they began to drop off abruptly. There were only

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three after that, eleven days before the cut-off point, one at the six-day point, and another an hour before the fugue line was due to pass over Doubab.

Mother circled the eighteen-day window. She said, "That is our return date."

Amanda brought up my being a Helm Maiden two nights later, but it didn't go anywhere. She let it lie for the rest of the week while she thought out the steps.

"It's like a military campaign," she said. She frowned, but with humor. "Your mother must have weaknesses. Soft spots. When I find them I'll know what to do."

I thought about it, perched on one of the posts supporting the veranda. Mother was like that—a redoubt. I looked for weaknesses and it surprised me. I couldn't find any.

There was a building below the lodge, a small rectangular structure with crumbling foundations, broken walls and scattered timbers. Mother and I explored it. We found inside a rusted mass of analytic equipment and piles of broken plaster casts.

"This is where Pan Kirst lived," Mother said. She crossed to one of the windows and looked out. Standing there, arms akimbo, her hood fallen back, she struck me as formidable, an unshakable pillar. A fist tightened itself inside my stomach—*what if we could not change her mind?*

The next three days were busy ones. Mother set out to investigate the climbing twisting trail that led to the top of Crown Mountain. Amanda and I spent our time in the lower valleys, laying traps to catch the weasel-like rodents that nested there. Broiled and spiced, they made good stew, a welcome change from our packaged fare. While we were setting snares, Amanda installed surveillance cameras at the head of each canyon. "Precaution," she said, grinning. "Practice really—there's nothing larger than weasels on Doubab."

"There were the aliens," I said. "Once."

"Maybe they left someone behind when they left," Amanda said, laughing at me. "That would be a shock."

It was late on the fourth day. I was preparing dinner in the kitchen when I heard a sudden gleeful shout.

"Virgy, come here!" Amanda's voice commanded from the next room.

The routine scan she had made of the surrounding terrain revealed a tiny smudge vanishing up the side of the adjoining mountain. According to the maps that one was called Maylow, after the captain who had discovered Doubab. Amanda looked at me, eyes gleaming, then stopped the display and ran it backward until the smudge was centered again on the screen.

I said, "What is it? Some kind of bear?"

Amanda shrugged. "There's no way of telling except by going over there to find out. There's something strange about it, though. See the way it goes from shadow to shadow, staying away from the light?"

She ran it again, and I caught a ripple of tawny fur, a flash of white ruff. The creature moved quickly, for all that its gait was lumbering, erratic.

"It's been injured," I said.

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"Maybe," Amanda said. She bounced up and strode to the window, hair an auburn swirl. "Get my case," she said, looking out. "There's still light enough for tracking."

"But Mother should be back at any moment. It's dinner time."

Amanda shrugged dismissively. "There aren't supposed to be any bears on Doubab," she said, her voice rising with excitement. "Or *any* large animals, for that matter. It could be we've discovered something new. It would be a shame to miss the opportunity of seeing it up close."

I stared at her. She gazed back. There was the glint of devilment in her eyes. And suppressed energy. She hadn't brought along any of the mock-lifes, and she missed her daily workouts.

I got the case. The one from Montargis was beneath her bed, pushed well back. Hers was on her nightstand, glowing with polish. It was black, like the leather Amanda wore. But there all similarity ended. The surface was slick, and its hinges, if there were any, were invisible. Along the top ran a double row of lizard's bumps, keys to locks Amanda said could not be broken. Inside the case were the spurs and spikes I had seen Amanda use on the mock-life. Much else, too. Implosion sticks, neural gases, repulsor shields—Armageddon in a satchel—so rumor went.

I picked it up gingerly by its carrying strap. It was lethal, Amanda had said. Booby-trapped.

We got off the floater at the base of the mountain. Its noise, Amanda told me, carried too well on the wind. That much was true enough. I suspect, though, that it had more to do with her own freedom of movement than it did with alarming the creature.

The sky was giving up its gray. We climbed into twilight more black than blue. Shadows made long fingers beneath the ridges.

"Stay close," Amanda said. She scrambled up onto a small plateau. I followed, then turned and looked back across the valley. Rowan's lodge was a tiny spark of light against the gathering darkness.

For twenty minutes we climbed upward, the night wind slashing against our faces. It was fast becoming too dark to see. We ascended a two-hundred-foot ramp and came to another break, a long flat triangle of snow and ice. Amanda strode out onto it and then stopped. She glanced back at me. When she spoke, there was exultation in her voice.

"Tracks here, Virgy. Big ones." She knelt in the snow, spanning the impressions with fingers and hands.

I joined her and we looked at the line of tracks going off up the slopes. They were large, and one of them bore more weight than the other. "It's walking upright," I said, before realization hit me. *My God—it must be human! Male, from the size. . . .*

A quick glance at Amanda revealed an unflustered exterior. Her eyes were narrowed on the half-arc of ragged stone above us that made a blot against the sky. She did not appear surprised. I wondered how long she had known. Perhaps from the start—it's hard to fool Maidens of the Helm, *exceptionally* difficult to deceive Amanda deVere.

"There's a cave up there," she said

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meditatively. "I wonder if our friend is at home."

"Cave? What cave?" I followed her gaze, saw only darkness, saw nothing. She caught my expression and gave a little chuckle.

"Sensors, Virgy. Built into the helm. I can see pretty far into the infra-red—and some into the ultra-violet. There are aural amplifiers, too, if I need them." She pointed. "There's a hot spot about two hundred yards up and to the left." She stood up with a lithe no-effort movement and followed the tracks upward. After a moment I followed, my skin prickling at the thought of myself wearing blue silk and black leather, afraid of nothing, striding as Amanda did, into the unknown.

The way had been used before. And often. The snow was packed down and bore the look of careful maintenance. I peered outward and saw why. The rim broke off abruptly and plummeted into darkness. A false step meant a long and deadly tumble.

"Stay close," Amanda murmured. She touched me with one gloved hand and I felt the hard ridged outline of her spike. She gestured ahead at solid-seeming rock. "The cave is just ahead, angled off to the left."

I gripped her shoulder. My voice made a squeaky whisper: "Are we going to go in? Just like that?"

"Of course. Do you want to leave now, and maybe let him get away?" She squeezed my arm. I recognized rebuke and felt a quick flush of shame.

There was a covering over the cave mouth, a patchwork of animal hides. Amanda thrust it aside with one hand so that there was room enough for both of us to enter.

The inside smelled. Of ill-cured hides, and far more potently, of ripe humanity. Beyond was a small fire, on its far side a reclining figure swathed in fur pelts. At our entrance the figure stirred, then lunged upright, one hand grasping a wooden staff.

The first thing I noticed were the scars. Impossible not to. They were deep, and many, distorting the entire left side of his face, a fact his beard did not—could not—conceal. And he was *old*—his bones showed through his flesh. For all that, he looked at us with a certain amount of bravado, his single eye far back beneath his brow. That single eye gleamed.

"Who are you?" Amanda asked, breaking a brief tableau. She moved toward the fire, a dragonfly in darkly glowing armor—*a Helm Maiden.*

"Stop!" the creature snapped, bringing one hand down across the staff. The move could be interpreted either as a defensive maneuver or one preparatory to attack. His hawk-like face bore a certain imperiousness of manner that said he was in command of the situation.

Amanda gave him a taunting look and grinned. The old man threw a side glance my way, checked the shadows along one wall, and made as though to duck that way.

Amanda moved to cut him off, but he anticipated her. He turned in midstride toward the cave's entrance and came through the center of the fire, scattering embers behind him. He came toward *me!*

Amanda told me later I dived at his legs, but I don't remember it. I do re-

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member waking up with a lump on my head and a queasy feeling in my stomach. The old man was lying half in and half out of the cave entrance, a dart protruding from his leg.

"You okay?" Amanda asked. She knelt and touched the bruise that was forming on my forehead. When she looked at the fallen man her eyes smoldered angrily.

"I'm all right," I said. I half sat up. "He nearly got away, didn't he?"

I got a short nod for a reply. "If you hadn't slowed him up he might have," she said. She mussed my hair for me and then gave an abrupt snort of chagrin. "I'll give him this—he thinks things through quickly. *Damn* . . . he drew me in—I should have been prepared for something like that."

She rolled the fallen form over and studied the man's features. In spite of herself she blanched at the scars, the empty eye-socket. Then, with a dry irony, she chuckled.

"Someone—or some*thing*—marked him," she said. "But our boy won the fight." She gave me a meaningful glance and shook her head admiringly. "That little scuffle must have been a lulu!"

"But who is he? No one lives on Doubab."

Amanda shrugged and removed the dart from the old man's leg. "We'll have to ask him when he wakes up," she said. "In the meantime let's look around, see what we can find."

We did not find much. The cave was about fifteen feet across. There was a short tunnel leading off to another exit higher on the mountain. On a shelf of rock there were clay pots containing dried roots. We also found smoked meat hanging from strings, a large cache of firewood, and several blankets made from skins.

"I'm curious," Amanda said when we had completed our survey. "Why would he live here when the lodge is available? That would have to be more comfortable than *this*." She toed the sleeping mat in disgust.

"Maybe he was afraid," I said.

"Afraid of what? Afraid of whom?"

I shook my head. Doubab was deserted. What, indeed, had he to fear?

The old man came to his senses slowly. He shuddered all over, drew in long sobbing breaths. His hair fell over his face and Amanda brushed it back.

"Who are you?" she asked.

There was fear written on the man's ravaged face. I wondered how I had thought him imperious. He was a feeble old man, whose sole thought had been to escape.

He looked at Amanda, then flicked a glance at me. The gnarled hands raised themselves into beseeching hooks. "No war!" he said hoarsely. He looked back at Amanda and said again, more softly: ". . . oh god, no war!"

Night on Doubab was a tapestry of muted sounds. There was the creaking ice up on the mountains, the occasional fall of snow ledges, the treble cry of small creatures. And, over everything, the rough-honed edge of the wind.

I listened to it all and fed wood to the big fireplace in the lodge, thankful for its warmth.

"Where is he now?" Mother asked. She had listened to us tell of our troglodyte.

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"His cave," Amanda said. "He wouldn't come with us willingly, and it was too dangerous to carry him on that trail. Also unnecessary."

"You're not worried that he'll slip away from you?"

Amanda shook her mane of auburn hair. "There's a tracer in him. Subcutaneous. It was in the head of the dart I stuck him with."

"Who is he?" Mother asked, and looked at us both. It always came back to that. Who was he—and what was he doing on Doubab?

Amanda sat down at the big table and helped herself to a cup of tea. Dark Sorbonne tea. "He won't—or perhaps he can't—answer any of our questions. It's as if he doesn't know himself. Maybe he's a survivor of the war . . . or a deserter, hiding out. He'd be the right age."

"What do you think, Virgy?" Mother asked. She looked my way.

I threw a final stick on the fire and joined Amanda at the table. "There's something strange about him," I said, mulling it over. "I mean, other than living in a cave. It's funny. Most of the time he seems a weak and helpless old man. At other times . . ."

"At other times?" Mother prompted.

I said, "It was just an impression I had . . . that, even surprised, he was somehow in command of the situation."

There was a brief silence and then Mother said, "Those words he spoke. What were they again?"

"He said . . . 'no war,' " Amanda answered, stirring her tea.

"That was it? That was all he said?"

"That's all," Amanda said. "Do you make anything of it?"

Mother fingered her beads. "It probably means nothing at all," she said. "But *no war* is an anagram for Rowan."

The old man had left the cave briefly during the night, going further up the mountain and then returning. Amanda showed us the tracer marks on her tracking scope. We discussed it over breakfast.

"You think there's another cave up there?" Mother asked.

"Could be." Amanda shrugged and broke a biscuit in half. She buttered one of the sections and took a bite before carrying the thought farther. "He's probably got an entire network of hideouts in the mountain—he strikes me as being the cautious type." She paused and looked at Mother. "You really think he's Rowan?"

"He *could* be," Mother said only. "With Pan Kirst dead and the Crown dismantled, his existence here on Doubab would no longer have had meaning. The records, and they're hazy at best, say that Rowan left this world. But what if he did not . . ." She moved her shoulders fractionally and rose from the table. "Come on. Maybe we'll find out from his own lips who he is—and why he hides in caves."

By daylight Doubab was a wilderness of white. The track leading up the mountain was clear, however, and we took the floater all the way to the cave entrance.

Amanda entered first, the spikes in her hands catching light from the early morning sun. There was no danger, though. Rowan—if indeed that was his

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name—was seated quietly on a flat stone eating the remains of a small breakfast.

"I've been expecting you," he said to Amanda. He seemed almost cheerful. He tossed a bone in the general direction of the fire, gave me a nod, and then stood up so abruptly he nearly cracked his skull on an overhang. He stared, and I turned to see what he was looking at. Mother had entered just behind me, a ghostly figure in her surplice and cowl, her face hidden by the shadows beneath her hood.

"Who—?" The old man's voice was suddenly a croak.

Mother took a step forward. She said, smiling, "My name is Frieda. I'm a Disciple of The Shining Light. *Ajol*, my friend."

"*Ajol* . . ." the other mouthed the word, echoing it as though it were a long-forgotten prayer. Then he sat down again and clasped his hands, not looking at Mother, not looking at any of us.

"That word means something to you, doesn't it?" Mother said. "Where did you hear it? Who said it?"

The only answer was a flicker from the old man's good eye.

Mother went to him, knelt and took his hands in hers. She showed no fear, no revulsion.

He raised his head fractionally.

"You're Rowan, aren't you? Come to the lodge—your lodge—and let us help you."

"No!" Power there, but almost a reflex.

Mother matter-of-factly examined his face, running her fingers first over the empty eye-socket, then down the scarred cheek. I marvelled at her courage, her foolhardiness.

"Do you know who did this?"

"No."

"It nearly killed you, whatever it was. They might almost be claw marks. Did you fight some animal here?"

"I don't know." The man's voice was a murmur.

"Does the name Titus Wilde mean anything to you?"

There was a flicker of something, but the old man shook his head.

"Pan Kirst?"

The man's face was a mask, revealing nothing. He shook his head again.

Minutes passed while Mother knelt, studying him. The small fire began to go out and Amanda and I built it again, using wood from the stacks along the wall.

"You two go on," Mother said finally, rising and coming toward us. "I'm going to stay here today."

"Hardly," Amanda snorted derisively. "You think he's safe, just because he hasn't hit you over your pointy head yet with that staff of his. Well, I know better. He's unpredictable."

"I won't be harmed," Mother said. She gave us both an enigmatic smile. *Inner Understanding. Outward Love.* She was a redoubt. A pillar. She said, "You investigate that second cave of his. I'll bet there isn't one."

Amanda was not to be put off. She said, "You haven't seen his moves, Frieda. He's good—even for as old as he is. He's a professional."

Mother did not reply, and the silence stretched out into a long beat of seconds. Finally Amanda shrugged and gave in. Too quickly, I thought.

She said, "I did warn you."

"Yes," Mother said.

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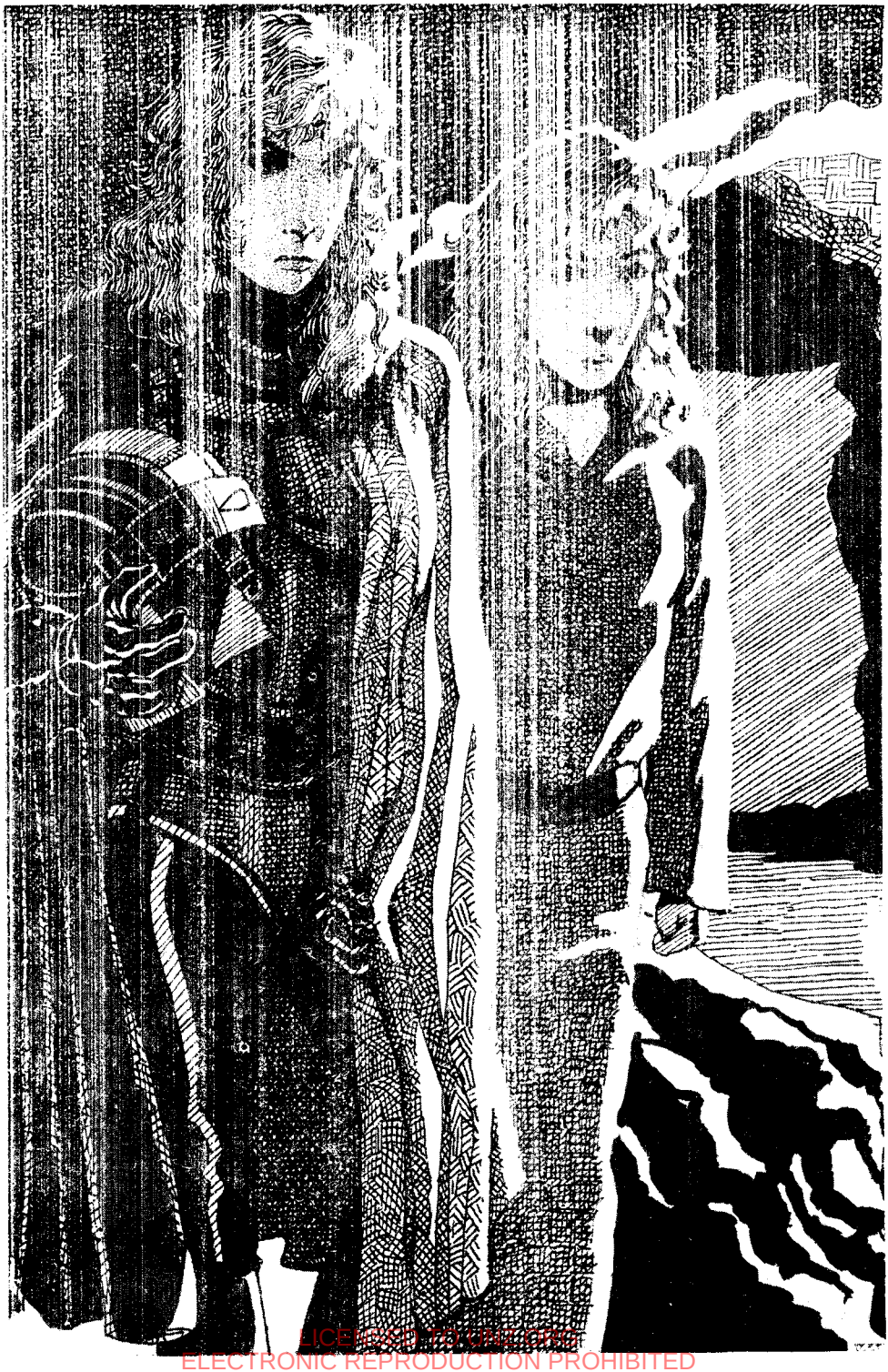

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"Then at least take this—" She pushed a silvery object the size of a thimble into Mother's hands. "If you're in distress, simply press down on the top of that. I'll be here in a matter of minutes."

"Very well," Mother said. She put the thimble in a pocket of her surplice.

Moments later, we found ourselves outside the cave watching sunlight sparkle off ice ledges. I looked at Amanda and she gave me a mugging grin. She didn't quite rub her hands together, but there was about her an aura of suppressed glee.

I said, "What are you up to? Will Mother really be all right?" I didn't understand what was going on—what *had* gone on—only that I had missed something.

"She'll be fine," Amanda said with a nod. She put an arm around me and gave my forehead a kiss. "I think, cousin, that we've found one of those soft spots I was telling you about."

"What do you mean?"

"One of your mother's weaknesses is that old man in there."

"Rowan?"

Amanda nodded. "If that's his name."

"You said he was unpredictable."

She gave my arm a reassuring pat. "Only so that Frieda will keep her guard up. Actually, he has enough residual tranquilizer in him to keep him tame for a week."

There was no cave above. There was a lookout point, though, where Crown Mountain could be seen, and the valley below.

Mother spent the next several days in the cave. Rowan wouldn't or couldn't live in the lodge; something about it seemed to terrify him. He did not protest a beard trim and a bath and an eyepatch, though, and he began to look decently human.

I went up Maylow once and found Mother teaching Rowan the precepts of The Shining Light.

"Your mother will make him a Disciple, if she can," Amanda said, laughing, sitting on a fallen log below the lodge. She had her weapon case with her, and now she opened it, turned half away so that I could not see the combination she used on the lizard bumps. She took out a hunting boomerang, gave me a look, then stood up and jammed a stick in the ground at her feet. She threw the boomerang, and it sailed around a clutch of small trees before returning. It struck the ground two feet to the side of the stick and Amanda shook her head in disgust. "Close, but not close enough. I must have misjudged the wind." She picked the weapon up and held it, preparatory to throwing.

"He seemed to understand everything she was saying," I remarked. "And he was agreeing with her on most of it. Maybe he's heard it before."

Amanda let her arm fall, so that she was holding the boomerang by one long vane. "He's been lonely for a very long time, Virgy; that makes him vulnerable. And your mother has not had a cause like this one in all the years she's been a Disciple. After all, he's Rowan—he knew The Shining Light!" Amanda paused and looked at me with devilment in her eyes. "That makes *her* vulnerable, too, of course. So we'll watch, and learn—and bide our time." She straightened and threw the boomerang.

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We watched it arc out, skim the leaves of the trees and disappear. Moments later it came into view again, a flashing curved windmill. It bounced once, then sliced through the stick Amanda had jammed into the ground. Satisfied, she picked up the weapon. She said, "Have you been keeping track of the days?"

I hadn't. I calculated quickly on my fingers, then said in astonishment: "Tomorrow is the eighteen-day window. We're supposed to go back to Sorbonne."

Amanda nodded. "Your mother told me last night she was delaying her return until the six-day window. Rowan, it appears, is reluctant to leave Doubab."

I thought of the fugue line and felt the first faint twinges of unease. What if . . . what if . . . a lot of what-ifs. I felt infinity breathing on my neck.

"I want you to use that window tomorrow," Amanda said, putting the boomerang back into its case. "Go to one of the university worlds. Find out everything you can about Rowan. I have a feeling that information is going to prove most useful."

"What about you?"

She gave me a grin and shook back her hair. "I'll keep an eye on things here," she said.

Amanda took me to the top of Crown Mountain next morning, and while we waited for the Gate to become operative, I went to look at the shrine. Setsen Dai looked impassively out upon the snow-covered slopes, his Puckish mouth twisted as if at some monumental joke.

"Time," Amanda called, glancing at her chronometer, and I walked back to stand beside her. She gave me a quick hug and a smile, and nodded toward the Gate. When I entered it I looked back, and inexplicably, I shivered.

The trip was uneventful. One moment I stood on the wind-blown heights of Crown Mountain, and the next I was on the stargate circling Sorbonne.

Laerdes was the closest university with full records of Doubab and the time before. I went there, nodding my head at irony rampant.

Apart from weaker gravity, it was a lot like Sorbonne. The sky leaked, and I was wet before I made the cover of the library overhang. I looked around, saw students everywhere, some of them my age, some older. It didn't look like a bad place, really—but it wasn't the Helm Order.

Inside the library, I sat at a computer console and summoned up the past.

There were no true records of Rowan before his time on Doubab, though there were tie-ins with fraud schemes and certain other low-level criminal activities in the Colony Worlds. There were no pictures; it seemed he had an aversion to cameras. The sole solid link appeared to be with Pan Kirst. There was a friendship there of long standing.

Of Kirst there was more. A great deal more. Thirty years earlier, Earth was ascendant, the outworlds in thrall. Kirst had been a tactician in a war of independence. He'd been responsible, personally, for the destruction of at least a score of worlds. World-assassin, in truth!

Where he and Rowan chanced to meet remained a mystery, but meet they had. Rowan had shown up on Doubab a year

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after war's end. He'd built the lodge and taken in tourists while Kirst worked at translating the alien language.

I read on, and somewhere between the first day and the third a chill began to grow in the pit of my stomach. When it got too big to carry around I stopped and bit my lip and wondered what Amanda would do in my place. Then the thought came to me—perhaps I was wrong.

I left Laerdes and wandered. I used the stargates. I went from cold and bitter worlds to salty sunlit ones, but my chill did not leave me.

In the end I went back to Doubab.

Amanda wasn't there to pick me up so I walked down, the hills glowing around me with reflected light.

I clumped into the lodge, expecting to see Mother or Amanda or both; it was nearly lunch time. There was no one there, though there was stew cooling in the kitchen.

I knew where Mother was. I knew where Amanda was likely to be.

Teaching.

Hunting.

I walked to Maylow.

Halfway up to the cave I looked back across the valley and saw Amanda heading toward the lodge in the floater. I waved, but she did not see me.

When I reached the mouth of the cave I hesitated, breathing in the sharp mountain air. I didn't know for sure what I was going to say, nor how I was going to say it.

It was dark inside. The fire had burned itself down, leaving only the glow of banked embers. I closed my eyes while they adjusted. Then I opened them—and felt myself go rigid.

Mother! Oh, Mother! I saw first the feet.

Four. Bare. Feet. And the blanket lying loosely over them. . . .

Mother—what have you done!

My tongue clung to the roof of my mouth. I said something stupid then, some inarticulate sound that magnified itself and made an echo in the cave. The forms within the blanket stirred. Mother sat up, saw me for the first time. Her eyes widened, and she stared, but she said nothing. The old man sat up, too, his nakedness white and loathsome.

"He's Kirst!" I said finally, strangling on the words, snarling with my fury. I pointed an accusing finger at the old man's torso. "His body was never found! He never died! You've been making love to your own prophet's murderer!"

Mother's face took on expression, and then lost it. Thunderstruck, she looked at the figure beside her and then back at me. One hand sought her prayer beads. An inner turmoil was addressed, argued, lost. She leaned forward, one pale breast breaking free of the blanket.

She said, "He's Rowan." Her eyes pleaded.

I shook my head. "No. I've just come from the library computers. I've seen Rowan's obituary. He died a dozen years ago—in the Colonies."

The old man hunched forward, pathetically scrawny, his single eye blinking furiously.

He said, "I don't *want* to be Kirst! I want to be Rowan."

"Of course," I said scathingly. "But you're not. You're Kirst, the world-as-

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sassin. I saw pictures of what you did to those planets—to Earth. I saw *you!*''

Mother gasped. ''You recognized him?''

I hesitated for only a moment, but it was enough. I said, ''He was different then, of course. Younger, without a beard, without injuries. But it was him!''

Mother sighed. She said, ''But you're not sure—not positive. You can't be.'' She sat for several seconds, thinking. Finally she stood up unselfconsciously and began dressing, pulling her surplice on over her head and pushing her feet down into her boots. Then with great tenderness she bent and touched the old man's head.

''I know you aren't Kirst,'' she said. ''He was an evil man, and he died a long time ago, on Crown Mountain.''

My voice descended into strained whispers. ''He *is* the scourge, Mother. What proof do you need? Shall I ask the spirit of Titus Wilde?''

She turned and struck without warning, her hand cracking against my jaw like wood on bone.

''We'll talk of this later,'' she said. ''At the lodge.''

I was stunned. By reflex I turned and stumbled out of the cave, my eyes blinking at the sudden light. Below I saw Amanda careening toward me, her pennant flying straight back in the air wash.

It was night, black Doubab night. I slipped out of the lodge with the case I'd taken from beneath Amanda's bed. I followed the tiny triangle of stars that formed a wedge above Maylow.

When I got to the cave I walked in without announcing my presence.

The old man was awake. He stared at me.

I gazed back at him, anger rising through me all over again, making my arms tremble.

I said coldly, ''Why do you live in this cave? Why don't you want to leave Doubab? What is it you're afraid of?''

He shuffled his feet and looked away indifferently.

''I'll tell you what you're afraid of,'' I said. I licked my lips. ''You're afraid to face yourself—afraid of what you'll find. And you won't leave Doubab because they have ways of proving who you *really* are—then there would be no doubt at all!''

He stood up and crossed to the cave's entrance, pushed aside the patchwork of skins and looked out at the enveloping darkness. After a moment or two he turned his head to look at me.

''Your mother has been telling me about the fugue line,'' he said. ''I've been thinking about that. Does it seem to you that it's a natural occurrence?''

The change of subjects caught me by surprise. I said, ''What do you mean?''

He shrugged lightly. ''What if the aliens sent it? *Because* we're using the stargates.''

I felt cold. I said, ''That's profane —*you're* profane! You're saying Titus Wilde is responsible for the fugue, for turning all those worlds into low-mentality zoos.'' I stopped. ''Besides, why would the aliens want to do that?'' My voice was thick with contempt.

He was silent. Then he said, ''Why indeed? Perhaps to stop Mankind from invading the stars.''

I said hotly, ''You mock Setsen Dai—and his gift.''

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He let the patchwork of skins fall and resumed his seat by the fire. He shook his head wearily. "I'm too tired to mock anybody. It was simply an idle thought—the maunderings of an old man's mind."

I suddenly remembered why I had come. I took the case from my shoulder and sat it down against the ochre stone.

His gaze flickered over it. "What's that?"

I said, "There's proof in that case of who you are. Rowan or Kirst or simply crazy man. Open it—if you can."

He suddenly smiled, at what I did not know. It was a painful smile, full of irony, full of knowledge unfathomable. He said, "Is there a key to it?"

"A combination. Something based on primes, I think. I watched Amanda open it once. She touched these two first." I pointed to two of the lizard's bumps.

He looked at me again, his gaze full and questioning. "You favor Amanda," he said only. "And I think I know her pretty well by now."

"Yes," I said. "I'm going to be a Helm Maiden."

He looked at the case again, then his gaze flickered between it and me. The muscles of his throat tightened.

"Thank you, Virgy," he said at last.

And I left the case at his feet, and came away. Kirst was a tactician, a genius. It was he who had defeated Earth's battlefleets. It was he who had found the secret of an alien tongue. If the old man opened the case he was Kirst.

If he opened the case he was dead.

The case was still there in the morning, and it looked as though it had not been touched. The old man simply gave me a shrug when I picked it up.

"Coward!"

"I suppose so," he replied. "But you were right. The truth is, I simply don't want to know." He went on eating breakfast, his single eye warily watching me.

When I got back to the lodge I found Mother and Amanda arguing. It was the six-day window. Only one remained after this one, at less than an hour before the fugue line cut across the orbit of Doubab.

"I'm staying here," Mother said. "With him."

"With Kirst?" Amanda's lips twisted. She stared unbelievingly.

Mother's face was smooth, serene. It had recaptured the tranquility I had made vanish the day before. She said, "Even if he is Kirst, I will stay with him."

"You doubt that he is?"

She nodded. "I do. But that no longer matters. He is a human being—and a Disciple, and his hurt goes deeper than you can imagine. I will stay with him because he needs me."

"And Virgy?" Amanda asked bitterly. "What of her? Will she no longer need a mother?"

Mother sat down at the table and began to make herself a cup of tea. "You spoke of making her a Helm Maiden," she said after a time. "Perhaps that would be best, after all."

I felt a rush of blood to my head. *Helm Maiden!* I was to be a Helm Maiden!

"You won't change your mind?" Amanda asked.

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"No. And you'd better go. Your window will be opening soon."

"There's one more, if you *do* change your mind," Amanda said.

Mother took my hand, kissed me, then pushed me away.

"Yes, I know," she said to Amanda.

The last I saw of her was as she sat there, sipping tea, her hood drawn up around her face, her mouth firm and solid and full of peace.

Helm Maiden—

I felt shaken, bowled over by blurs from the past, and at the same time diminished, unable to deal with them. I swallowed against the dryness of my throat, looked up, saw Baltair's sun shining overhead, felt its heat against my face.

"Attention!"

I drew more erect. The awarding of Helms was beginning.

When it was my turn, Amanda made the presentation. She gave me a nod, then a smile, and adjusted the Helm when I had donned it. I touched the controls, sent it quickly through infra-red and ultra-violet, saw colors chase themselves in writhing patterns across the side screens.

"Congratulations!" Amanda said. She gave my hand a squeeze.

You favor Amanda, Rowan-Kirst had said on Doubab. *And I think I know her pretty well by now.* And he had looked inside my soul, his single eye unblinking.

Yes, he had known me, that crazy old man.

And suddenly tears streamed down my face, uncalled for, uninvited. I could taste their salt on my lips. Amanda looked at me, touched my cheek with a wondering fingertip. She seemed strangely moved.

I could not tell her that it was not for silk and leather that I cried—cried at last. But for a frozen mountain on a doomed planet on the other side of the fugue line. *What must they be, hunched in their cave . . . ?* I had never cried for her before, and I might never cry for her again. But I did now.

Ajol, Mother! Oh, ajol . . . ajol . . . ■

● In the world of daily life, the world which we perforce inhabit, there is much talk about order, particularly from statesmen and politicians. They tend, however, to confuse order with orders, just as they confuse creation with regulations. Order, I suggest, is something evolved from within, not imposed from without; it is an internal stability, a vital harmony, and, in the social and political category, it has never existed except for the convenience of historians.

E.M. Forster

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NEW COMMUNICATIONS TECHNOLOGIES AND THE DEVELOPING WORLD

Arthur C. Clarke

I'm happy to be back in *Analog* again, because one of its precursors, the March 1930 *Astounding*, was the very first science-fiction magazine I ever owned. I can still see that—well, astounding—cover with Wesso's glass-domed spaceship heading for the Moon. They don't make them like that any more....

And later, the first U.S. appearance of my fiction was in the same magazine, during John Campbell's long reign. I would like to pay tribute to John's influence and his help—as well as to that of the late George O. Smith, whose "Venus Equilateral" stories in the war-time *Astounding*s may have stimulated my own thoughts about space relays.

The article that follows is based on the address I gave as Sri Lankan delegate at UNESCO headquarters, Paris, on 17 June 1981, at the conference on the International Program for the Development of Communications (IPDC). Over 30 nations were represented, (including the US, the USSR, Cuba, Saudi Arabia, Iraq...) and not surprisingly the proceedings were like a miniature copy of the UN itself. I sat next to the Russians, and opposite the Amer-

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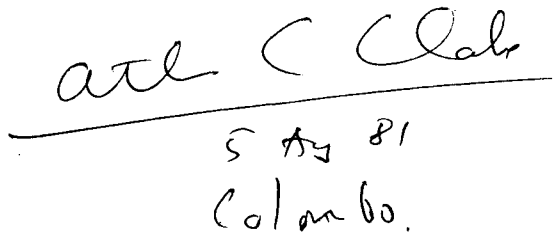
icans, and had a lot of fun with both.

UNESCO has been severely, and not always fairly, criticised in many quarters for its assumed attitude towards the free flow of communications—which is what this conference was all about. So I seized the opportunity to point out that it didn't matter *what* the politicians said or did; the issue had already been settled by the engineers.

Rather to my surprise, the speech was applauded by *all* the delegates. Obviously, some of them hadn't understood what I was saying....



In many ways, and for many purposes, printed matter—books, newspapers, wallposters—will always be the best and cheapest form of communication. But now electronics has given us tools that can perform miracles impossible to the printed word—and which, of course, can reach millions who are unable to read. The newest and most powerful of these communications devices depend upon space technology, and because this fact is not yet generally realized I shall be concentrating upon it here.

But first, a few basic considerations: What does a country need in the way of electronic communications? At the risk of stating the obvious—which is often not a bad idea anyway—I will list them in order of priority.

1. The Telephone

A reliable telephone system must surely have the first priority: it affects every aspect of life—personal, business, government. We have also belatedly realized that it can be a major energy-saver, making countless journeys unnecessary. It is also the greatest *life-saver* ever invented, though often it requires a tragedy to bring that point home. A few years ago, thousands died when a dam burst in an Asian country. The telephone that should have warned them was out of order. . . .

It will be a long time—though not as long as you may think—before everybody has a telephone. But with a telephone in every village, we can have the next best thing. Telegrams can be dic-

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tated so that anyone can get a message to anyone else within a few hours, with all the implications this has for business and social life.

2. Radio

There is no need to stress the value of radio, both for spreading information and establishing a national consciousness. If I were dictator of a country so poor that it had to choose between a telephone system and a radio service, I would be tempted to put my money on the radio—despite everything I've just said about the importance of telephones.

And radio is nowhere near the end of its development. We have seen the transistor revolution of the 1960s merge into the solid-state revolution of the 1970s, so that radios are cheaper and smaller and more reliable than anyone could have dreamed, even thirty years ago. I can see at least two more revolutions ahead. First there will be built-in solar cells to generate electricity, so that we won't have to bother about batteries any more—what a boon that will be in remote places! Second will be the coming of direct-broadcast satellites, so that perfect reception will be possible over all the world, and the horrid cracklings of the short waves will be a thing of the past.

3. Television

Everything that can be said about radio is true of television, squared: so most of what I say will concentrate on this medium.

4. Telex

Telex equipment is still very expensive and limited to commercial and government use. However, recently developments in the home computer field have shown that it could be quite cheap. It will eventually merge into—

5. Data and Computer Networks

Even for highly developed countries, these are still in their infancy, though they undoubtedly represent the wave of the future. It will be a long time before we in the Third World can afford them; of greater importance to us may be what I have named—

6. Electronic Tutors

These will not involve communications links at all; they will be the next generation's equivalent of today's pocket calculators, and will be about the same size and cost. They could trigger as big a quantum jump in mass education as did the invention of printing, five centuries ago.

But let me start by going back to 1965, when the first commercial communications satellite, Early Bird (INTELSAT 1) went into orbit. It could carry 240 telephone circuits, or a single television channel.

Fifteen years later, in 1980, INTELSAT V was launched. It carried not 240, but 12,000 simultaneous phone calls—at a fraction of the cost. *And* several TV channels at the same time.

However, we are now reaching the limits of what can be done by purely robot satellites. Comsats as large as tennis courts can just be squeezed into existing launch vehicles, to unfold like glittering metal flowers when they reach space. But in another decade we shall

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need satellites as big as football fields—ultimately, as large as cities (indeed, some of them will be cities!). They will become possible, thanks to manned transportation systems like the space shuttle, which can carry construction crews and their equipment into orbit.

But why do we need such huge satellites—what have they got to do with the problems of the Third World? The answer may seem paradoxical, even perverse.

In highly developed regions like the United States and much of Europe, communications satellites are a great convenience, but are not absolutely vital. These countries already have excellent cable and microwave links.

To many developing countries, however, satellites are *essential;* they will make it unnecessary to build the elaborate and expensive ground systems required in the past. Indeed, to such countries, satellites could be a matter of life and death. To put it as dramatically as possible, unless major investments are made in space, millions are going to die, or eke out brief and miserable lives. And most of those millions will be in the Third World.

Let me explain this paradox, which is typical of the way in which technology affects modern society—and is why no one without *some* understanding of these matters should be allowed to enter the corridors of power.

Because the first comsats were small and feeble, it was necessary to build huge, multi-million-dollar ground stations, with dishes thirty meters across, to contact them. Thus their sole use was to provide links between national telephone, telex and TV networks—where these existed. They transformed the pattern of world communications, but did not directly affect the man in the street—still less the man in the mud hut.

That situation is changing with explosive speed. When only a few score Earth stations were involved, it made sense—indeed, there was no alternative in the 1960s and '70s—to put the complexity and expense on the ground. But now that there are larger and more powerful satellites in orbit, ground stations can be much smaller and cheaper. Indeed, for the simplest ones the cost has been reduced a *thousandfold!* All over the United States there are now homes with dishes about three meters across, picking up scores of programs from the communications satellites hovering high in the southern sky. Soon these dishes will be less than a meter across, and everyone who can afford TV at all will have them. This is the beginning of the DBS—*Direct Broadcast Satellite* — revolution. It means that ultimately a few very large satellites can provide any type of service—telephone, telex, television, data, computing facilities—at extremely low *per capita* cost to every member of the human race . . . except for those rather few people who live near the North or South Poles. . . .

I'm not saying that satellites will do everything. In heavily populated areas, fiber optics and short-range radio or infra-red broadcasts will often be preferable. But even these local systems will, of course, be linked to the global network through satellites. And *only* satellites can provide every conceivable

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type of communication cheaply and efficiently over entire continents, and to all moving vehicles on land, sea or in the air.

One of the first persons to realize the implications of this for developing nations was the late Dr. Vikram Sarabhai, whom I first met at the UN Conference on the Peaceful Uses of Outer Space at Vienna in 1968. In the paper he delivered there, he stressed the importance of "leapfrogging" obsolescent technologies and—in some cases at least—going straight to advanced ones. We have seen this happen in transportation; many nations have bypassed the railroad age, and gone directly from ox-carts to aeroplanes.

As you may know, Dr. Sarabhai was the driving force behind the first large-scale attempt to use a communications satellite—the NASA/Fairchild ATS 6—for direct TV broadcasting to rural areas. Unfortunately, he did not live to see even the initiation of that daring experiment, which took place in 1975-76. It was brilliantly carried out by his colleagues of the Indian Space Research Organization and the Space Applications Center at Ahmedabad, headed by Dr. Yash Pal—who, I am happy to see, will be Secretary General of the next UN Space Conference in 1982.

Some of the remarks that Dr. Sarabhai made at the '68 conference deserve to be repeated now; the intervening years have made them even more timely:

"A developing nation following a step-by-step approach towards progress is landed with units of small size, which do not permit the economic deployment of new technologies. Through undertaking ventures of uneconomic size with obsolete technologies, the race with advanced nations is lost before it is started. . . . Developing nations such as India have the possibility of effectively using space communications for national needs. Compared to advanced nations . . . they have indeed an advantage *through not having an existing major investment in older technologies*" (my italics).

Of course there are problems, and to continue quoting Dr. Sarabhai:

"We often meet with a lack of self-confidence to pursue major tasks involving complex and unfamiliar technologies . . . anything which is innovative . . . is automatically regarded with suspicion. The administrative structure of governments in many nations is dominated at the top not by technocrats but by professional administrators, lawyers, or soldiers, who are hardly likely to provide the insights, experience, and the first-hand knowledge of science and technology which are necessary at the decision-making level. Moreover, advanced nations often play a negative role in their interaction with the developing countries. There is seduction by their political and commercial salesmen who dangle new gimmicks which they suggest should be imported . . . "

That last warning of Dr. Sarabhai's is one that I would like to endorse—and amplify. No technology in the history of mankind has ever produced so many hypnotically irresistible gadgets as the electronics business. Radio telephones, visual display units, talking calculators,

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video recorders— The list is endless. And six months after one device comes on the market, it's superseded by a model twice as good at half the cost.

Thus any developing country wishing to take advantage of all these marvellous new facilities must proceed with great caution. There is, as Dr. Sarabhai warned, always grave danger of becoming locked into an obsolete technology. You must be particularly wary when something is offered you for free—there may be a catch. Even with the best will in the world, and the most expert advice, it's sometimes impossible to avoid bad decisions. The speed of technological development is so swift that the better is the enemy of the good, and the best is the enemy of both.

At this very moment, in the vital field of video recording, such a complex multi-billion-dollar battle of standards is raging that a wise buyer will wait to do business with the survivors. We now have three main TV standards—PAL, SECAM, and NTSC. There are three competing videotape systems—Betamax, VHS, Phillips—with rumors of a much more compact one (longitudinal recording) on the horizon. Also two incompatible video *disc* systems are about to come on the market. And in the United States, CBS has just demonstrated high-definition TV using over a thousand lines. . . . If you're not thoroughly confused, you've not understood what I'm saying.

Fortunately, the development of global networks will eventually compel some degree of standardization, and many of the improved systems will still be compatible with the old ones, as black-and-white TV sets can still work with color transmissions. Nevertheless, I don't envy anyone who has to advise his country what to buy—or to accept as a gift —in the telecommunications field during the next few years. Or, for that matter, for the rest of the century. By 2001 *everything* we have now will still be operating somewhere. And it will *all* be obsolescent.

Let us ignore these messy practical problems, which can and must be solved, and look at the wider view. We are now entering an era when any conceivable type of communication or information could be available to any individual, anywhere on Earth, at any time. The only constraints are economic and political, not technical.

Like all technologies, the ability to communicate is neutral; it can be used for good or for bad. There was an amusing example of this recently, not a thousand kilometers from Sri Lanka, when the venerable profession of piracy had a sudden revival. A small ship was forced to anchor, owing to engine trouble, at a remote Indian Ocean island—and a flotilla of local canoes promptly descended upon it. In no time, everything that wasn't screwed down—and many things that were—had been spirited away, despite the anguished protests of the crew.

How did these latter-day pirates—these unsophisticated islanders—learn so quickly about their windfall? Simple; they'd all called each other up on their Citizen's Band radios. . . .

Of course, this doesn't mean that CB radios should be prohibited any more than one should ban telephones because

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countless crimes have been committed with their aid. We must accept the good with the bad, unless we assume that the invention of speech was a big mistake in the first place.

At this point I would like to draw a distinction between *regulation* and *control* in the field of communications. Regulation of some sort is inevitable and necessary for the good of all users, just as one has to decide whether to drive on the right or the left-hand side of the road. Regulation is essential to ensure standardization and because spectrum space is limited; the International Telecommunications Union has been doing this task with considerable success, for over a hundred years.

But *control*—i.e., the management of the *messages*, not the *medium*—that is another matter. It ranges all the way from complete censorship to well-intentioned cultural guidance. Let me quote my friend Dr. Yash Pal on this:

"In the drawing rooms of large cities you meet many people who are concerned about the damage one is going to cause to the integrity of rural India by exposing her to the world outside. After they have lectured you about the dangers of corrupting this innocent, beautiful mass of humanity, they usually turn around and ask: 'Well, now that we have a satellite, when are we going to see some American programs?' Of course, they themselves are immune to cultural domination or foreign influences."

I'm afraid that cocktail-party intellectuals are the same everywhere. Because we frequently suffer from the scourge of information pollution, we find it hard to imagine its even deadlier opposite—information starvation. I get very annoyed when I hear arguments —usually from those who have been educated beyond their intelligence —about the virtues of keeping happy, backward peoples in ignorance. Such an attitude seems like that of a fat man preaching the benefits of fasting to a starving beggar. And I'm not impressed by the attack on television because of the truly dreadful programs it often carries. Every TV program has *some* educational content; the cathode ray tube is a window on the world—indeed, on many worlds. Often it's a very murky window, but I've slowly come to the conclusion that, on balance, even bad TV is preferable to no TV at all.

In this connection, let me quote a testimonial from an unexpected source. During the late 1950s, South Africa was the only wealthy country in the world which did *not* have a television service. The minister in charge of broadcasting adamantly refused to permit one. "Television," he proclaimed, "will mean the end of the white man in Africa."

That was an extremely perceptive remark. From his point of view, the minister was perfectly right. If the pen is mightier than the sword, the camera can be mightier than both.

No wonder that *all* governments, whether they are liberal or not, make some attempt to control what appears on television. Indeed, there is material which virtually everyone would agree should be kept out. Sadistic pornography and incitement to violence against racial or religious minorities are obvious examples.

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Back in 1960—five years before INTELSAT 1—I published a short story about a plot to brainwash the United States with the help of communications satellites broadcasting pornographic programs. I wrote it with the deliberate intention of making people think about the potential of comsats, both for good and for evil.

There is a vast territory where even men of good will may disagree fundamentally on what should, or should not, be presented to the public. Exposures of scandals or political abuses —especially by visiting television teams who go home and make rude documentaries—can be painful, but also very valuable. Many rulers might still be in power—or even alive—had they known what was really happening in their own country. A wise statesman once said: "A free press can give you hell, but it can save your skin." That is even more true of TV reporting—which, thanks to satellites, will soon be transformed out of all recognition.

Last month I had the pleasure of showing my old friend Walter Cronkite around Sri Lanka, while we filmed one of his "Universe" programs. I say "filmed," but actually we were using electronic cameras, and it was wonderful to view what we had shot within minutes instead of days.

However, even the electronic cameraman still has to get his cassettes through an obstacle course of postal authorities and customs officials and censors. But not for much longer; very soon he will need only a small collapsible dish, about the shape and size of a beach umbrella, and he'll be able to beam his pictures up to the nearest satellite, and straight to home. . . .

The implications of this are enormous. Just one example: how many soldiers would shoot a cameraman, if they knew that millions of people were watching? And if you think some countries would not admit TV teams under these conditions—well, as equipment becomes so compact that a single man can carry it, the more difficult it will be to keep him out. And the harder closed societies try, the harder they will have to explain what it is they are so anxious to hide. In the end, they'll give up.

You doubt this? Then let me remind you of one astonishing step which has already occurred in this direction. Could you imagine, twenty years ago, someone in the Pentagon asking his Russian counterpart: "Would you mind if we photograph the Soviet Union from end to end, at such resolution that we can see everything bigger than a football?"

Remember the uproar, back in 1960, when Gary Powers's Lockheed U2 was shot down over Russia, doing precisely this! Yet now it is happening every day, without a murmur of protest from either side. Reconnaissance satellites are of such benefit to both parties that they are accepted by mutual consent.

In the same way, it will have to be recognized that all types of information and communication (with some obvious exceptions) are of benefit to everyone. Truth will out eventually, and those who try to suppress it will be condemned by history, as a recent United States president discovered to his cost.

In the struggle for freedom of information, technology, not politics, will

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be the ultimate decider. One turning point came several years ago, though few people realized it at the time. With the introduction of IDD (International Direct Dialing) the power of the state to control news was irrevocably broken. Private individuals could speak to each other across frontiers, and though Big Brother might catch some of them, he couldn't possibly keep track of them all.

But this is just a beginning, for the age of the telephone as a fixed instrument is swiftly passing. One of the main objectives of the very large comsats now being discussed is the provision of mobile, person-to-person communications. The old science-fiction dream of the wrist-watch telephone could soon come true, and at a cost of a few dollars—given the determination to achieve it. Can you imagine the impact of this upon societies where, at present, there is only one telephone per thousand people? Some time during the next century, the human race will become one big, gossiping family. . . .

As the world comes to depend more and more upon satellites not only for all types of communications, but weather forecasting and resources inventories, search and rescue, navigation, etc., etc., the developing countries will be faced with a problem clearly foreseen by Dr. Sarabhai. I quote again from his speech to the 1968 Vienna Conference:

"One of the hardest questions to be faced in adopting a satellite for national needs arises from the fact that many interested nations would not expect in the near future to have an independent capability for placing such a satellite in orbit. . . .The political implications of a national system depending on foreign agencies for launching a satellite are complex. . . . Perhaps collaborative participation of nations in the construction and operation of a launching system for the peaceful uses of space would be realized in the long run. The military overtones of a launcher development program of course complicate the free transmittal of technology . . . but knowledge cannot for long be contained within artificial boundaries and one has to learn to share. . . . Restrictions on the transfer of technologies which are involved in the peaceful uses of outer space merely jeopardize the security of the world through retarding the progress of nations."

Any Third-World nation wishing to have its satellite launched will soon have quite a number of options. Currently, the most reliable haulage firms are the US and the USSR, either of whom will be happy to quote prices . . . at least to their friends. Many years ago the president of COMSAT remarked to me in his Washington office: "If the Russians offer me a better deal than NASA, I'll accept." Before long the European Space Agency, China, India, and Japan will also be in the market. And there are a couple of dark horses trying to enter the race with cut-price launchers—Lutz Kayser's controversial OTRAG operation, and Gary Hudson's California-based company.

So five years from now there will be no lack of vehicles. I would suggest that a choice be made on purely pragmatic grounds—what insurance premium does Lloyd's quote on the launch? I am not joking—payload insurance is now very big business.

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Of course, most developing countries will be concerned neither with building nor launching satellites, but merely renting facilities in them—as they do now. There will be more and more specialized satellites shared by countries in the same geographic region. Even countries which, down on Earth, are not very friendly with each other. Radio waves have never respected frontiers, and from an altitude of 36,000 kilometers, national boundaries are singularly inconspicuous. The world of the future will be an open world.

I have space now for only a brief reference to another electronic development which is just about to burst upon us, and which may be at least as important to the Third World as communications satellites.

Little more than ten years ago, pocket calculators came on the market. Instantly, slide-rules and mathematical tables became obsolete; engineers, scientists, businessmen—*everyone* who had to work with numbers had his life transformed. The first calculator cost several hundred dollars; now you can buy far superior models for twenty.

Today, a second and even more momentous revolution is just starting based on the same technology. This is the advent of the electronic *book*—a whole encyclopaedia—even a whole library—in the palm of your hand. The pocket translators already on the market just hint at the possibilities; these electronic books will also speak, so that they can, for example, teach a foreign language. Beyond that, they will have plugged-in programs, so that they can provide tutoring in virtually any subject. They will be nothing less than electronic educators—able to work twenty-four hours a day. Of course, no machine can replace a good *human* teacher—but no country ever has enough of those! When they are made in the millions, the electronic tutors would cost no more than the pocket calculators of today. Solar-powered, they would need no batteries; properly designed, they would never wear out. So their written-down cost would be negligible, and even the poorest countries could afford them, especially when the reforms and improved productivity they stimulate help those countries to boot-strap themselves out of poverty.

To sum up—what I have tried to do is to sketch some of the truly astonishing communications possibilities of the next decade. Almost everything I have described will be commonplace by the year 1990—all of it will be available by 2000.

I am well aware that many of these electronic marvels may serve only to increase the sense of frustration in countries where schools can't even afford blackboards and chalk. But more and more we must think of the human race as a single unit—and Mankind can afford anything it wants, especially if it stops squandering its resources on weapons of destruction.

What I have described to you are the weapons of peace. ■

● Order and creativity are complementary.

Lewis Mumford

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Arthur C. Clarke

Jay Kay Klein's biolog

Arthur C. Clarke's beginnings in science fiction are typical. His case mainly differs in being extreme: from the compleat fan into a world-famous personality, rivalled only by the Good Doctor Asimov. First earnings amounted to no more than an English pound, back in 1937, as a ten percent payment by Eric Frank Russell for a story idea. In 1981 he signed a million-dollar contract with Del Rey Books for a sequel to *2001*.

Born of a farming family in Somerset, England, just in time for the last year of World War I, Arthur became fatherless at the start of the Great Depression and entry into his teens. He had begun reading science fiction at ten, starting soon after to experiment with what then passed for electronics, and joined the British Interplanetary Society at seventeen.

Unable to afford higher education, Arthur became an auditor in London for His Majesty's Exchequer. His rented room was so tiny, visitors had to sit on the sill of an opened window or in the hallway. Later, he shared an apartment with William F. Temple, like himself a fan and future science-fiction writer. There, a German spy visited in an attempt to gather information about rockets. There, too, Arthur fought the usual fannish losing battle with a balky mimeo machine. He continued to write for British fan magazines, and went on to sell two articles about astronomy and space flight to the first British science-fiction magazine. His self-confidence was so evident, fellow fans nicknamed him "Ego," and he so bylined his fan writings.

Drafted into the RAF during WWII as a radio technician, he became a lieutenant responsible for teaching students to use the first Ground Controlled Approach radar, with its 400 Fleming valves. He continued writing, turning out in 1945 the first serious proposal to use synchronous satellites for planetary television sys-

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tems. Many years later, he published an article, "How I Lost A Billion Dollars in My Spare Time by Inventing Telstar." In 1946 he helped revive the BIS, and was elected chairman. That year he also entered King's College of the University of London under a war veterans grant, receiving two years later a B.Sc. with first honors in physics and mathematics.

Arthur started his climb to fame and fortune with a short story in the April 1946 issue of this magazine. The following month he had a novelette. Twenty-two years later, *2001: A Space Odyssey* appeared on the screen. Along the way, and since, he has gathered many awards, among them the UNESCO Kalinga Prize in 1961 for science writing; the International Fantasy Award in 1952; best short story Hugo in 1956; best novel Nebula in 1973 and 1979; best novel Hugo and John W. Campbell Award in 1974. His latest novel, *Fountains of Paradise,* won both the Hugo and Nebula.

Only ten years after his first story, he appeared as guest of honor at the 1956 world science-fiction convention in New York City. His writing continues in a more sophisticated way the values of the early science-fiction writers, where the scientific background and technological problems are of greater importance than the characters.

Still a British subject, Arthur resides in Colomba, Sri Lanka, where he is Chancellor of the University of Moratuwa. SCUBA diving has been a passion since visiting Florida in 1952, and several illustrated volumes of underwater exploration attest to this. He has been near-fatally injured several times, once off the Virgin Islands while in the company of Jacques Cousteau. Last year, his health improved enough to allow him to resume diving after a five-year layoff. Despite a declaration some years ago that he was finished with global traveling, he may be seen from time to time at international meetings as far afield as London and Moscow and on American television. And *2010: Odyssey Two* is scheduled for publication this November.

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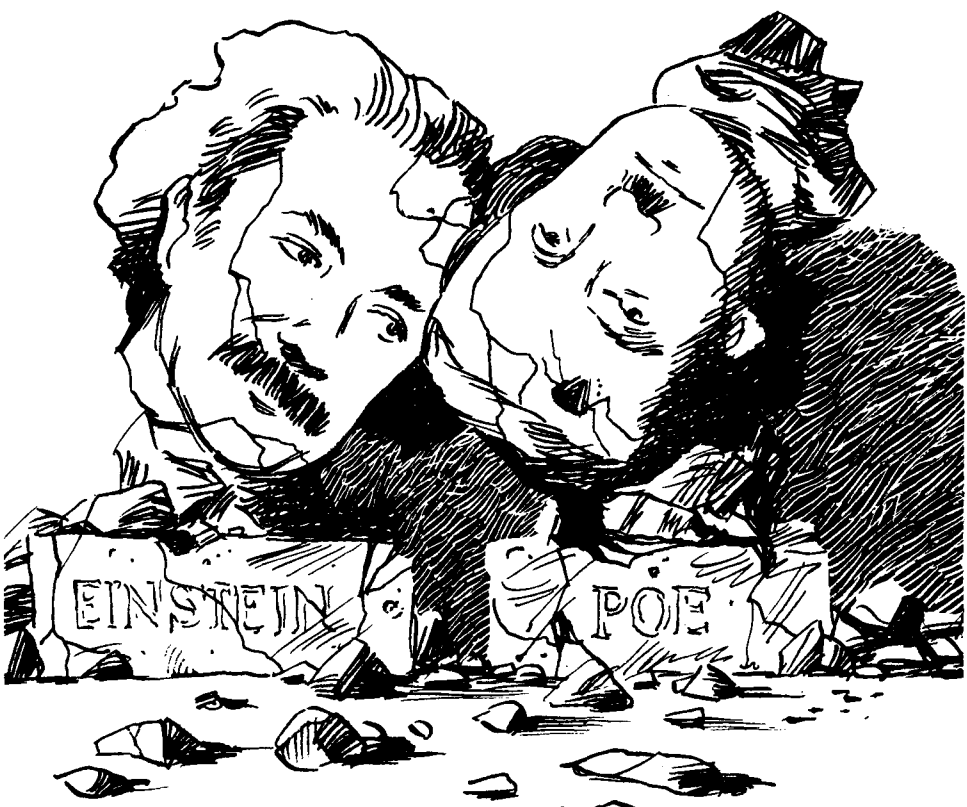
Ray Brown

PIXIE DIXON AND THE MYSTERY OF THE HAUNTED PLAYPEN



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Only a few months after Alex Palmer graduated from Central University (B.Sc. 2113, Taxicab Management), he decided to learn to read and write.

He had just passed the oral exams given by the Hack Board—a government council charged with maintaining high professional standards by denying licenses to those who couldn't afford the initial membership fee in the Drivers' Association (a private concern dedicated to maintaining high professional standards by requiring all its members to be degreed).

Alex's Uncle Justin, a genius of dedication to cabbie quality, Chairman of the Hack Board (and, coincidentally, of the Drivers' Association) had brought Alex's license to his apartment in person, along with a small gift—a diamond-encrusted Memory Box of Uncle Justin himself. Alex had been effusively congratulated and thoroughly embarrassed.

It was his uncle who inspired him to be a cabbie in the first place, back in high school. He had helped him through college. It was a joint effort, according to Justin, and he'd given the impression of working almost as hard as Alex to get that license. Now that they had it, Alex found himself bedevilled by vague, inappropriate aspirations.

Somehow, soaring above the city behind the control panel of a robot-driven cab, collecting money, no longer had the appeal it once had. In spite of Alex's protest that everything was OK, really, Uncle Justin had left looking worried.

When he had slouched out the door, Alex opened the Memory Box, which was supposed to stay closed until Justin's death. The recording started, and there was Uncle Justin again, bug-sized, reminding Alex that it was he, Uncle Justin, who had done more than any other person to prevent the technological unemployment of cabbies and that it was he, Uncle Justin, who had founded the Drivers' Association, and that as Alex progressed—perhaps soon to the awful responsibility of the Chairmanship itself—he might want to think occasionally about some things he, Uncle Justin, had learned in his climb to the top. A string of homilies followed.

Alex snapped the box shut and looked about, desperately, for something to distract him from his misery.

The only luxury Alex had allowed into his seedy campus flat was a 125-cubic-foot holostage. Usually, Alex figured that for a mistake, but that night, in his despair, he flipped it on to "Cliff's Show." The show, he remembered from History of Television II, was a direct successor of the Jack Parr-Johnny Carson line: interviews seasoned with comedy routines in which the star, Cliff Schiff, invariably starred.

The scene on the stage brightened to show Cliff's three-foot homunculus prancing about, dressing itself. An eyeshade, a gray smock, a thick black moustache. The moustache prompted Alex to guess that a skit on President Echo was coming. Sure enough, the figures on the stage shrunk, expanding the view to include a storefront with a dutch door and a sign that read: ECHO'S COIN EXCHANGE.

Cliff put himself behind the bottom of the dutch door, using it for a counter. His fat sidekick, Poncho, walked over, playing the part of customer.

"What's new?" Poncho asked, tummy

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quivering in a fair imitation of suppressed laughter.

Cliff fetched something shiny and round from behind Poncho's ear and held it up. "We got a very rare item in just today," he said. "An aluminum twenty-dollar piece from 2113. There are very few of these in circulation, you know."

A joke, son: Echo's monetary innovation was a flop—nobody would use the things. But only a few nervous giggles came from the audience. Cliff was going over their heads again. Alex wondered how much longer Cliff had before they gave him the axe.

Cliff must have been wondering the same thing. The lack of response obviously bothered him. But he was a showman—he abandoned the script, seemingly, and improvised, leading Poncho along:

"You don't think a hundred dollars would be too much to pay for this aluminum gem, do you?"

"Well, as a matter of fact . . ."

"Do you think twenty dollars would be too much to pay for this twenty-dollar piece?"

Poncho squirmed. "I don't know."

"Would you buy it for a quarter?"

The audience howled. The pie in the hand on the laugh-o-meter's pointer slapped into the face at "10."

Alex groaned. "Would you buy it for a quarter," was an automatic laugh-getter, punch-line to a dozen simpler jokes already. Someday, Alex thought, they would abandon jokes entirely and just give the punch lines. Surely there must be something better than this crap!

But he pulled his hand back even as it reached for the dial. He knew from bitter experience that there was nothing better in this time slot. "Cliff's Show," sadly, was one of the best shows on holovision. He wasn't the only one who felt sad about that; everyone he knew hated the stuff on the holostage, but the movies were usually worse, and you couldn't spend all your time listening to the Panegyrators. He longed for the Golden Age of Television.

Thinking back to those days as explained to him in History of Television II, Alex recognized the form of the joke as a variation on the "would you believe" bits perfected in the 1960s. He smiled, remembering those television courses—the high spots in his college career. His professor had told him he would have got "As" in all of them for sure, if they'd only given grades.

He was trying to recall a piece of a lecture devoted to the use of Yiddish words in the twentieth century when he became aware of a scene-shift. Cliff was back at his desk, an empty chair beside him. The skit, in its new form, had ended sooner than planned.

"Well, folks," Cliff said, nervously peeling off his moustache, "we got some extra time on our hands, and that should give us an even better chance to get acquainted with our last guest, Dr. Wilberforce Triffle. Usually, you know, we hardly even have even a couple minutes for our last guest, or sometimes we can't even squeeze him in at all, and that makes us sad. But this time we got a whole ten minutes.

"Dr. Triffle is going to talk to us about the current rage amongst the highbrow set—books! Let's give him a big hand!"

To the accompaniment of tired ap-

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plause, a familiar, portly figure waddled onto the stage, sat, and wiped his bald head with a handkerchief. Alex recognized him as a Comp. Lit. professor from Central U.

"What you just said might have been a little misleading," Triffle began. "Books have always been with us."

"Well, of course," said Cliff. "The big brains that make machines, them engineers, they gotta read the stuff that comes out on the computer screen . . . Of course, that isn't the same as a book, is it? But then, the guys that fix the computers, they *gotta* read books, 'cause if the computer's broke, how they gonna read the screen?" He beamed.

"Um, that's true," said Triffle. "However, I didn't come here to speak of technical manuals, but Literature." The last word was spoken with such reverence that Alex found himself involuntarily bowing his head.

"You mean like Shakespeare?" Cliff asked.

"Well, he was a playwright. Prose fiction is what's really big."

"So the engineers and the computer guys and like that are getting into fiction in a big way?"

"It's really quite exciting," said Triffle, scooting to the edge of his chair. "There have always been the few, naturally, who supported the literary arts—or at least there have been since we recovered from the war with Wygand. But now there's really a boom. Many people are producing their own books. Bookstores are opening all across the country, and several are reported to be making good profits. I've opened a bookstore myself, in the Central University area, called *Triffle's* . . ."

Triffle's voice was temporarily buried in rock oud music: a flurry of twangs to which Triffle was oblivious until Cliff tapped him on the shoulder and murmured into his ear. Triffle's eyes and mouth formed three startled, innocent circles and he began to speak again as the music faded out:

". . . construed as being commercial. I really didn't think of that. Sorry. But, as I was saying, in the course of my, um, work, I've been meeting people from all walks of life who either want to catch up on the classics or who want to learn to read. It's not all the so-called intelligentsia. Just yesterday an audiologist stopped in . . ."

"Huh?"

"The man who tests your hearing. He realized he was missing a lot, and I sent him to Central's free extension course. It costs nothing but time to learn to read—and even the most boring book is infinitely preferable to the usual run of goo available on this holostage." His arm made a sluggish sweep through the air. "People hate it, you know. They watch it because they haven't got anything better, but if they'd just take the time . . ."

Again Triffle was drowned out by the oud and this time both men seemed oblivious. Alex grinned. The professor was right, and some overzealous government censor was finding it hard to take. The reason so many hated the holostage was that it was aimed at the few. During the war between the Earth-Luna-Mars axis and Wygand and his Spacer Alliance, the government had seized control of the airwaves and had not, in the eighty-odd years since, found reason to give it up. Official policy was that

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holovision was for everyone, and since the smart can understand what the stupid can, but not vice-versa, the quality of programming had been plunging in a search for the lowest possible level for all eighty years.

The same with the movies. And if you really wanted to get into Panegyration, you had to be in on it from the beginning, help to assemble the crowd, and then it often turned out to be a bust.

What the hell could you do to amuse yourself when you didn't feel like conversation?

Maybe the professor had something.

The oud music faded out again. "That's nice, Professor," Cliff was saying, "but weren't you talking earlier about something being exciting?"

Triffle turned bright red, took a few deep breaths, and faded back to normal. "The real excitement," he finally said, "is in the Literature itself. If you can't read, it'll be hard for you to imagine, but I'll try to give you an idea. The most exciting, the most beautiful tales ever told are on the printed page. One is tempted to try to compare the experience of reading, say, *Moby Dick,* with holovision or the movies, but no such comparison is really possible. Reading for entertainment is a completely different *kind* of experience. You can start and stop anywhere you wish. You can read the same scene over and over again, savoring the same words in different ways. The written word can present an idea in its full breadth and depth—in the old days, people's entire lives were sometimes changed by a single book. . . ."

Triffle had a way with the spoken word—a smooth, melodious voice that played on the spine. Alex's spirit soared up and away from the holostage into enraptured speculation.

That was what he needed—to have his life changed, perhaps over and over. To dive deeply into deep ideas.

He had played with the notion of learning to read, sometimes, but before now there had never really seemed to be anything in it. Now he blessed himself for having already figured out how to sound out certain letter-combinations. He'd even caught on to the fact that some, like *gh,* could seemingly stand for anything, or nothing.

But literacy wasn't a marketable skill, in itself. There would be no extension course for him. If he was going to learn to read anyway, he might as well escape from cabbiedom at the same time.

He picked up the phone and dialed Mother. A list of charges flashed across the screen, which he ignored.

"Mother," he said, "I want to search the course catalog. How much will I have left in my monthly balance if I do?"

"Six thousand, two hundred fifteen dollars and a quarter," the sugary voice answered.

Alex grinned. That was more than enough to last the month.

He and Mother went through graduate course after graduate course. He was afraid he didn't have what it took to be an engineer or a repairman, but there were other interesting possibilities. He could become a holovision scriptwriter, but that took eight years of postdoctoral work, and besides, the thought of actually having to make that stuff up made him slightly nauseous. He could become a holovision prompter—the man who

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read the script to such as Cliff and made sure it was memorized. That required a doctorate and nothing more. But there were thousands of functionally literate groupies with the same aspiration, pushing the wages down.

An interesting thought occurred to him then. How did his History of Television professor get to *become* a History of Television Professor?

Mother gave him a scary story. It took twelve years of postdoctoral work. He would be thirty-eight years old before he could start.

He said goodbye to Mother and thought it over. In spite of everything, it still appealed to him.

He called his parents. They were too scared to be furious. His father, keeping a semblance of calm, tried to remind him that Uncle Justin made as much money as five professors and an engineer put together. His mother simply said he could tell Uncle Justin himself, and to be sure and remind him, when he did, that *they* had nothing to do with it.

That gave Alex pause. He went to Justin's Memory Box, fingering the lock of hair, the baby photograph, as he listened for some bromide that he might turn to his own use in an argument. There were several, but finding them didn't make it any easier.

Nor any more successful. When he told Uncle Justin his plan over the phone, Justin's reaction was as bad as his parents had feared. Alex was an ingrate—no, worse than an ingrate, a veritable traitor to cabbiedom. If he didn't appreciate his, Uncle Justin's, help, that was fine, but after his plan had backfired and Life had stomped on him he was not to come crawling back to him, Uncle Justin, for more help. Justin hung up on him.

So he woke up the next morning, for the first time in his life, unsuccored and alone. It made his breakfast tastier to count his available meals and wonder where he'd get the money for more. He had his cabbie's license—he could always use it. But could he use it and go to school at the same time?

He needed advice. He decided to talk things over with Dr. Tsagournis, his History of Television professor.

He took his time walking to campus, dawdling around the Fawcett Crater watching workmen move the warning signs in. He wondered if a book had been written about the bombing that produced it. When his watch told him that surely, by this time, Tsagournis had arrived on campus, he moved on.

The nearsighted, white-haired old lech was buttering up a particularly plain co-ed in the Commons when Alex caught up with him. He didn't want to interrupt, so he dawdled some more, this time by a coffee machine, peering through the crowd, waiting for the inevitable rejection. When the co-ed blushed and ran away, Alex drew a cup and walked to Tsagournis's table.

"Hi, Alex," he said, squinting. "You know, some women have absolutely no imagination."

Alex sat, said a few sympathetic words, then told Tsagournis of the dream he'd been infused with while watching "Cliff's Show."

It seemed to cheer Tsagournis, in a nostalgic way. "Ah, yes," he said.

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"I was illiterate through the first twenty-odd years of my life, too. I'm sure that Literature will be as much a solace to you as it has been to me. And I'm quite touched, really, that you feel my work might be the best choice for you, even though it's secondary, as it were, to your desire to read. Art History might well be improved by you—you're the best student I've had in years."

Alex blushed. "It's nice to be appreciated," he said.

"Yes, I think it's a good idea, if you can afford the initial membership fee in the Pedants' Union. But then, you'll have twelve years to raise it."

"I already have a hack license," Alex said. "Maybe I can work and go to school, too."

Tsagournis's jaw dropped. "You have a hack license and you want to be a professor!"

Alex shrugged.

"Well," the teacher said doubtfully, "I suppose there are more important things than money. I wouldn't count on working, though—at least not for your first few years. Learning to read is hard work, and while you're working on your master's you'll want to devote all your time to it."

"I know the alphabet already," said Alex.

Tsagournis smiled. "That's a good start, but not enough to really push you ahead."

Alex sighed. "Professor, I've *got* to work. I've got no money coming from anywhere else. I also know quite a few words. I can sign my name, and I've picked up a lot from looking at signs—you know, you can usually figure out the words on a sign from the context. I've discovered that a letter often stands for the same sound, but not all the time—that part's confusing, but I'm sure I can work it out. I've even played at making up sentences from the words from different signs, like 'Your lunch is radioactive.' "

He snatched a pen from Tsagournis's pocket and printed it out in capitals on a napkin.

Tsagournis looked at him with a little more respect. "There should be a period at the end of a sentence," he said, "but that's a mere quibble. Maybe you do have an advantage. How would you like to go to *Triffle's* and meet old Wilberforce?"

"You know him?"

"Sure. Maybe he can advise a course of study, put you far enough ahead of your class that you'll really have time to work."

On the ride over Alex dreamed of books—of opening one up and listening in his mind to the squiggles flowing like speech. He tried to imagine all the books that must have been written in the Age of Literacy—there must be millions of them. A whole lifetime of excitement stretched ahead.

The bookshop was a bit of a surprise—more in keeping with Alex's idea of a restaurant, or a tea-shop. The only books to be seen were all stacked on one table where a young man sat, occasionally scribbling something on a fly-leaf for one of the other customers. These seemed mostly to be engineers, easily identified by the gray boxes which hung around their necks—direct links to Mother, paid for by the gov-

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ernment. They liked to show who they were.

They sat clustered around a few other tables, talking to each other furiously. Bach's fourth Brandenburg Concerto twittered quietly in the background. Alex heard a snatch of conversation as he walked through: ". . . Schaumleffel interprets Twain too drily for my taste . . ." Tsagournis harrumphed and hurried Alex past them.

Triffle squeezed through a back door, caught sight of Tsagournis, and lumbered towards them, saying, "Well, if it isn't Art History, come to watch some in the making!" He and Tsagournis embraced.

"Who's your young friend?" he asked.

"This is Alex Palmer. He wants to learn to read."

"Did you tell him about the extension . . ."

"He seems to have mastered the basics himself," Tsagournis interrupted. He explained the situation more fully.

"Impressive," said Triffle, looking at Alex. "Why don't you just look through the books and see if there's anything here you can work with?"

"Where *are* the books?" Alex asked.

Triffle pointed to the door through which he'd come, then turned to Tsagournis again, saying, "You've come at a wonderful time. Basil Kincheloe is here autographing his work."

"So that's Kincheloe! I thought he was much older."

Alex left them and passed into the stockroom.

At first glance, it seemed that all of Western Literature must be in that one place; there were thousands of books on the shelves, all different. A closer look changed his mind. One whole shelf was filled with what he finally sounded out as *Moby Dick*. True, each book was different: there was a small blue paperback with white lettering, an enormous red leather tome with gilt, a black one bound like a Bible, and so on for eight feet. . . . To make sure, he took a couple off the shelf and laboriously compared the beginning of each. Call me unpronounceable. They were the same.

He glanced at the other shelves. They were not so monotonous—some held three, even four different titles, which he phoneticized as best he could: *Abused by a Cruel Whipmistress, Tristram Shandy, The Nemesis #236, Pixie Dixon and the Mystery of the Haunted Playpen*. Thirty or forty of each, most bound and printed differently.

Tsagournis peered around the door. "Have you found anything suitable?"

"I'm having trouble just figuring out the titles," Alex said mournfully. "What's a neamziss?"

Tsagournis shrugged, walked all the way in and over to the shelf Alex was nosing along. "Nemesis," he said.

"What's that?"

"An avenger, in this case. I think the book for you is right beside it. *Pixie Dixon*." He rummaged through the copies. "Here! This one's a Schaumleffel, too. Pixie has a simple vocabulary—only a few surprises. And you'll need a dictionary—much cheaper than using Mother—over here . . ." He ran to a box at the end of the shelf, reached in for a book, and ran back.

"There," he said. "Both books together won't cost you more than a cou-

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ple hundred. You know what a dictionary is?''

''Yes. But how am I going to figure out the words in *it?*''

''Triffle says you should just read as much of it as you can with the dictionary and underline everything you can't figure out. Then we'll have a better idea of where you stand. And as an added bonus, by the time you finish you'll be a much better reader.''

They walked into the tea-room again, to Triffle, who was reading over Kincheloe's shoulder while Kincheloe autographed another book for an engineer.

''I'd like to buy these two,'' Alex said, extending the books across the young man's face.

Kincheloe grabbed the top book, scowled at the cover furiously, and handed it back to Alex. ''You don't want that one,'' he said. ''It's outdated in its whole approach—definitely an inferior interpretation.'' He picked through the stack of books at his side and pulled out a slim clothbound volume with rough-edged pages. The cover read: *Pixie Dixon and the Mystery of the Haunted Playpen.*

''Try this one,'' he said.

''Now, Basil,'' said Triffle, ''I don't think the boy is quite ready for your pyrotechnics.''

''What do you mean? That's no boy,'' Kincheloe said indignantly. ''He's almost as old as I am. Have you read this? I combine Times Roman and Baskerville with a sans-serif of my own design, as yet unnamed.'' He flipped open the book, pointed to a page. ''Look at those caps—24-point alternating with 30-point. Anyone could appreciate that.''

''Our friend here,'' said Triffle, ''is just getting started. Schaumleffel's interpretation, say what you like, has a certain straightforwardness and simplicity that . . .''

''Schaumleffel!'' Kincheloe snorted. ''18-point Century expanded and a few overblown chapter titles!''

''Excuse me,'' said Alex, ''but I want to make sure—who wrote this book?''

''Why, Alicia Drywhistle, of course,'' said Tsagournis. ''Here, the title page will explain.''

Tsagournis took the book, opened it so Alex could see the words, and read aloud, half to Alex and half to Kincheloe:

''PIXIE DIXON AND THE MYSTERY OF THE HAUNTED PLAYPEN

By Alicia Drywhistle

By Herman Schaumleffel

who is a finer artist than you'll ever even be able to imagine, you young snot!''

Kincheloe sneered. ''I suppose you just *melt* when you see that pretty honeysuckle climbing up the initials!''

Tsagournis turned red, clenched his fists, and advanced. Triffle worked his way between them far more quickly than Alex would have imagined possible for one so large and dignified.

''Gentlemen,'' he said, ''let's not allow our artistic differences to degenerate into personal ones.''

''So you're a printer,'' said Alex. ''And Schaumleffel is a printer.'' He felt dizzy. ''When I first came in I thought you were an author.''

The engineer snickered.

''Of course I'm a printer,'' Kincheloe said, laughing.

''That's what I thought. I just wanted

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to make sure." He turned to Triffle. "But on 'Cliff's Show' you said that people were producing—oh, I see. Stupid of me."

"You sound unhappy," said Triffle. "What's the matter?"

"Nothing, I suppose. But I imagined, with people writing books all the time, that there'd be a lot to read." A thought struck him. "How many different books do you have back there? Different titles, I mean."

"Fifty-three," Triffle said proudly. "That's almost half of what's available. There are a little over a hundred titles being printed right now."

"Then new ones *do* come out occasionally?"

Triffle sniffed. "Perhaps I'm a bit conservative," he said, "but I find far more pleasure, far more comfort, yes, and far more aesthetic satisfaction, too, in reading the old, familiar classics —watching those beautiful, time-tested words flowing through new fingers."

"So the print, really, is what satisfies you."

"Well, after all," said Tsagournis, "even the greatest book is nothing without a good Interpretation."

"Well put!" said Triffle.

"And you don't carry any of the new titles?"

"No. And very few do. We deal only in classics, here."

Kincheloe grinned. "Triffle *thinks* they're classics. The theory is that what survived was highly valued. Let me tell you about it."

"OK," said Alex.

"They used to print books on paper that oxidized very easily," said Kincheloe. "They turned brown and crumbled after a few decades. And then there were the book burnings during the War with Wygand. So all that survived were a few of the few that were printed on better quality paper, and another few that were carefully hidden from light and air. When printing was reborn, fifty years ago, they used what was available and told themselves that since it was either carefully hidden or expensively done, it was a classic."

Kincheloe stared at Triffle accusingly and added, "So innovation is very hard. I tried printing a book that came to light a few years ago, called *The Prose Tales of Pushkin*, but nobody would carry it. Actually, the book had a very high potential, which my interpretation fulfilled completely."

"It really wasn't your best work, Basil."

"How about *Chastise Me With Scorpions*?" Kincheloe asked. "You carry that. And we both know, in our hearts, why *that* one was hidden away."

"We could argue about whether it's a classic or not," Triffle said agreeably, "but I can't think of any others." He turned to Alex and said, "Don't worry about *Pixie Dixon*. That one is a great book. Even Kincheloe should agree."

"I'll have to admit," Kincheloe said grudgingly, "that *Pixie Dixon* is a masterwork, though you might doubt it after Schaumleffel's finished with it."

"Nobody seems to understand," said Alex, "that I'm talking about how few titles there are. How long does it take to read an average-sized book after you become a good reader?"

"About ten hours," said Triffle, "if you really wish to savor it."

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"Ten hours, a hundred books, what does that come to?" asked Alex.

"About forty-two days, total," said the engineer.

"I'll be done in a year!" Alex moaned. "And then it's back to holovision!"

"That's not so," said Kincheloe. "In the first place, a new book comes out about once a year, if you know where to get it. And in the second place, most of the hundred can be read again and again with pleasure—like *Pixie Dixon*. I may be the best, but there *are* many other valid interpretations. I, myself, have been thinking of doing a new edition of that book. Old Style Number 7 and Electra—but I don't know, maybe that's too shocking."

"Once you get into it," said Tsagournis, patting Alex on the back, "you'll see what we're talking about. Right now you're like a blind man trying to appreciate Keane."

"Well," Alex said doubtfully, "I'll give it a try."

He paid for his books, promised Triffle to report to him on his progress, and started for the door.

"You don't have to drive me home, Doctor," he said to Tsagournis. "I want to take a walk anyway. I've got a lot to think about."

His apartment was on the other side of the campus. He decided not to cut across, but to take the long way around and walk through town.

He wandered into one of the city's seedier sections. It matched his mood. He couldn't really believe that reading those hundred books would give him all they said it would give. He hoped, but it was halfhearted hope. *Is there any pleasure to be squeezed out of reading my assignments on the computer screen?* he wondered. There was, he guessed, but of a different sort.

I can portion the books out, he thought. *Maybe a couple a year. Save them for when I've seen all the movies and I can't stand holovision any more and I'm tired of the Panegyrators.*

As if the world were moved by his thoughts, a Panegyrator appeared. He stood in an empty lot near the Capitol, his voice warbling out his chant as an oud player strummed a driving ostinato behind him. A bowl sat at his feet, and every once in a while, someone in the crowd threw money into it.

With the hope that this Panegyrator would cheer him, would be doing something worth listening to, he wormed his way into the crowd until the voice grew clear:

"Alone and lost the shattered
spacecraft,
Cleft from its allies by Wygand's
wedge,
Wafted Sunward, and Sayers said,
'What perilous power pitted us
Against each other? Pity us
O fiery fierce God . . .' "

Dull stuff, today. ■

● A society that thinks of reaching for the stars is going to be better equipped to solve its bread-and-butter problems than a society that introvertedly focuses on its darker aspects.
Harold J. Morowitz

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a calendar of analog upcoming events

5-7 March
WISCON 6 (Wisconsin regional SF conference) at Inn on the Park, Madison, Wis. Guests of Honor—Suzette Haden Elgin and Terry Carr. Registration—$15. Info: SF3, P.O. Box 1624, Madison WI 53701-1624, or call 608-231-2916 (11 AM to 6 PM Mon-Sat); 608-233-0326 evenings/Sun.

5-7 March
UPPERSOUTHCLAVE XII (Upper South Regional SF conference) at Park Mammoth Resort, Park City, Ky. Guest of Honor—Irvin Kock. Registration $8. Relaxacon, huckster room, art show. Info: UpperSouthClave XII, P.O. Box U-122, College Heights Station, Bowling Green KY 42101.

8-12 March
General meeting of the American Physical Society at Dallas, Texas. Info: APS, 335 East 45th Street, New York, NY 10017.

10-13 March
3rd International Conference on the Fantastic in the Arts (Swanncon 3) at Florida Atlantic University, Boca Raton, Fla. Info: Timothy Sullivan, Conference on the Fantastic, College of Humanities, Florida Atlantic University, Boca Raton FL 33431. 305-395-5100 x2538.

12-14 March
COASTCON (Gulf coast regional SF conference) at Royal D'Iberville, Biloxi, Miss. Guests of Honor—Wendy and Richard Pini. Special guest—Joe Haldeman. Registration—$12.50. Usual plus Consortium Musicum. Info: CoastCon, P.O. Box 1423, Biloxi MS 39531.

19-21 March
LUNACON 25 (New York-area SF conference) at Sheraton Heights, Hasbrouck Heights, N.J. Guest of Honor—Fred Saberhagen; Artist Guest of Honor—John Schoenherr; Fan Guest of Honor—Steve Stiles. Registration—$15. Info: Lunacon 25, P.O. Box 338, New York NY 10150.

9-12 April
CHANNELCON (1982 British National SF Convention) at Metropole Hotel, Brighton. Guests of Honour—John Sladek, Angela Carter. Registration—£3 supporting (all times), £6 attending until 1 December 1981, then higher. Info: Channelcon, 4 Fletcher Road, Chiswick, London, UK, W4 5AY (use airmail).

17 April
APRICON 4 at Columbia University, N.Y.C. Guest of Honor—Thomas M. Disch. Registration—$2 advance, $3 at the door. Info: Barnard/Columbia Science Fiction Society, 317 Ferris Booth Hall, Columbia University, New York NY 10027.

16-18 April
HIGH PLAINS II (Texas regional SF conference) at Quality Inn, Amarillo, Tex. Registration $10. Info: High Plains II, 1206 W. 18th, Amarillo TX 79120.

23-25 April
CONTRATEMPS (Nebraska-area SF convention). Info: Ship to Shore, P.O. Box 12373, Omaha NE 68112-0373.

2-6 September
CHICON IV (40th World Science Fiction Convention) at Hyatt Regency Chicago Hotel, Chicago, Ill. Guest of Honor—A. Bertram Chandler; Artist Guest of Honor—Frank Kelly Freas; Fan Guest of Honor—Lee Hoffman. Registration—$15 supporting at all times. Attending—$50 until 15 June 1982. This is the SF universe's annual get-together. Join now and get to nominate and vote for the Hugo Awards and the John W. Campbell Award for Best New Writer. Info: Chicon IV, Box A3120, Chicago IL 60690.

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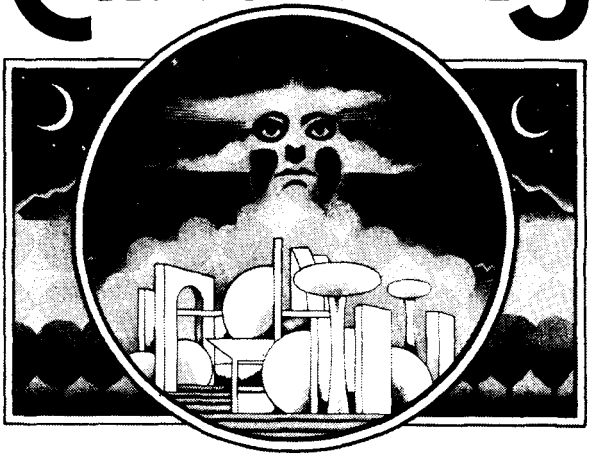

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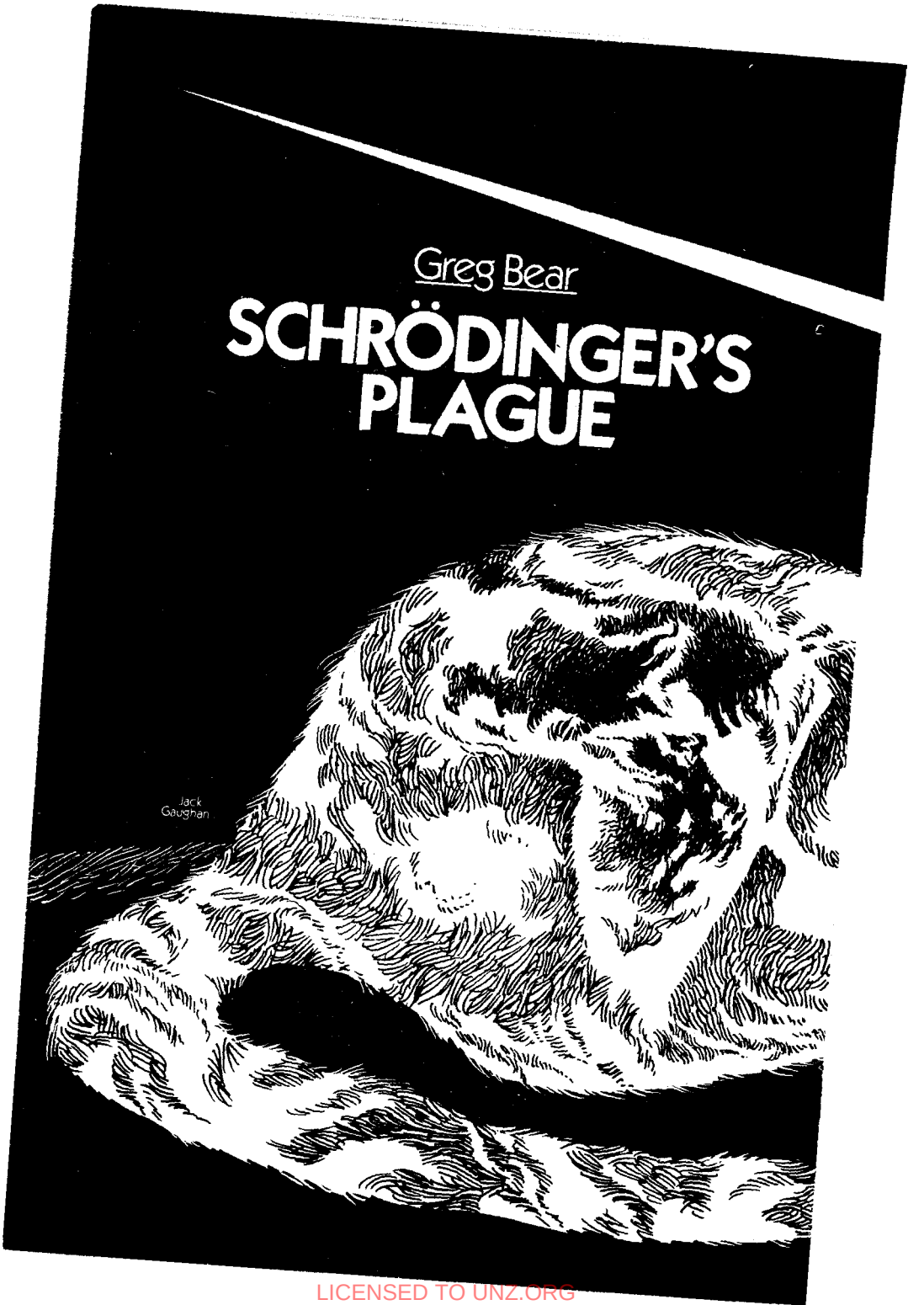

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Interdepartmental Memo—Werner Dietrich to Carl Kranz

Carl: I'm not sure what we should do about the Lambert journal. We know so little about the whole affair—but there's no doubt in my mind we should hand it over to the police. Incredible as the entries are, they directly relate to the murders and suicides, and they even touch on the destruction of the lab. Just reading them in your office isn't enough: I'll need copies of the journal. And how long did it circulate in the system before you noticed it?

Kranz to Dietrich

Werner: It must have been in the system since just before the events, so a month at least. Copies enclosed of the appropriate entries. The rest, I think, is irrelevant and private. I'd like to return the journal to Richard's estate. The police would probably hold it. And—well, I have other reasons for wanting to keep it to ourselves. For the moment, anyway. Examine the papers carefully. As a physicist, tell me if there's anything in them you find completely unbelievable. If not, more thought should be applied to the whole problem. P.S. I'm verifying the loss from Bernard's lab now. Lots of hush-hush over there. It's definite Bernard was working on a government CBW contract, apparently in defiance of the University's guidelines. ?—How did Goa get access to the materials? Tight security over there.

Enc.: five pages.

The Journal

April 15, 1981

Today has been a puzzler. Marty convened an informal meeting of the Hydroxyl Radicals for lunch—on him. In attendance, the physics contingent: Martin Goa himself, Frederik Newman, and the new member, Kaye (pr: *Kie*) Parkes; the biologists, Oscar Bernard and yours truly; and the sociologist, Thomas Fauch. We met outside the lounge, and Marty took us to the auxiliary physics building to give us a brief tour of an experiment. Nothing spectacular. Then back to the lounge for lunch. Why he should waste our time thus is beyond me. Call it intuition, but something is up. Bernard is a bit upset for reason or reasons unknown.

May 14, 1981

Radicals convened again today, at lunch. Some of the most absurd shit I've ever heard in my life. Marty at it again. The detail is important here.

"Gentlemen," Marty said in the private lounge, after we had eaten. "I have just destroyed an important experiment. And I have just resigned my position with the university. I'm to have all my papers and materials off campus by this date next month."

Pole-axed silence.

"I have my reasons. I'm going to establish something once and for all."

"What's that, Marty?" Frederik asked, looking irritated. None of us approve of theatrics.

"I'm putting mankind's money where our mouth is. Our veritable collective scientific mouth. Frederik, you can help me explain. You are all aware how good a physicist Frederik is. Better at grants, better at subtleties. Much better than I am. Frederik, what is the most generally accepted theory in physics today?"

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"Special relativity," Frederik said without hesitating.

"And the next?"

"Quantum electrodynamics."

"Would you explain Schrödinger's cat to us?"

Frederik looked around the table, obviously a bit put-upon, then shrugged his shoulders. "The final state of a quantum event—an event on a microcosmic scale—appears to be defined by the making of an observation. That is, the event is indeterminate until it is measured. Then it assumes one of a variety of possible states, usually the most probable state, of course. Schrödinger proposed linking quantum events to macrocosmic events. He suggested putting a cat in an enclosed box, and also a device which would detect the decay of a single radioactive nucleus. Let's say the nucleus has a fifty-fifty chance of decaying in an arbitrary length of time. If it does decay, it triggers the device, which drops a hammer on a vial of cyanide, releasing the gas into the box and killing the cat. The scientist conducting this experiment has no way of knowing whether the nucleus decayed or not without opening the box. Since the final state of the nucleus is not determined without first making a measurement, and the measurement in this case is the opening of the box to discover whether the cat is dead, Schrödinger suggested that the cat would find itself in an undetermined state, neither alive nor dead, but somewhere in between. Its fate is uncertain until a qualified observer opens the box."

"And could you explain some of the implications of this thought experiment?" Marty looked a bit like a cat himself—one who has swallowed a canary.

"Well," Frederik continued, "if we dismiss the cat as a qualified observer, there doesn't seem to be any way around the conclusion that the cat is neither alive nor dead until the box is opened."

"Why not?" Fauch, the sociologist, asked. "I mean, it seems obvious that only one state is possible."

"Ah," Frederik said, warming to the subject, "but we have linked a quantum event to the macrocosm, and quantum events are tricky. We have amassed a great deal of experimental evidence to show that quantum states are not definite until they are observed, that in fact they fluctuate, interact, as if two or more universes—each containing a potential outcome—are meshed together, until the physicist causes the collapse into the final state by observing. Measuring."

"Doesn't that give consciousness a Godlike importance?" Fauch asked.

"It does indeed," said Frederik. "Modern physics is on a heavy power trip."

"It's all just theoretical, isn't it?" I asked, slightly bored.

"Not at all," Frederik said. "Established experimentally."

"Wouldn't a machine—or a cat—serve just as well to make the measurement?" Oscar, my fellow biologist, asked.

"That depends on how conscious you regard a cat as being. A machine—no, because its state would not be certain until the physicist looked over the record it had made."

"Commonly," said Parkes, his youthful interest piqued, "we substitute Wigner's friend for the cat. Wigner was

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a physicist who suggested putting a man in the box. Wigner's friend would presumably be conscious enough to know whether he was alive or dead, and to properly interpret the fall of the hammer and the breaking of the vial to indicate that the nucleus has, in fact, decayed."

"Wonderful," Goa said. "And this neat little fable reflects the attitudes of those who work with one of the most accepted theories in modern science."

"Well, there are elaborations," Frederik said.

"Indeed, and I'm about to add another. What I'm about to say will probably be interpreted as a joke. It isn't. I'm not joking. I've been working with quantum electrodynamics for twenty years now, and I've always been uncertain—pardon the pun—whether I could accept the foundations of the very discipline which provided my livelihood. The dilemma has bothered me deeply. It's more than bothered me—it's caused sleepless nights, nervous distress, made me go to a psychiatrist. None of what Frederik calls 'elaborations' have provided any relief. So I've used my influence—and my contacts—to somewhat crooked advantage. I've begun an experiment. Not being happy with just a cat, or with Wigner's friend, I've involved all of you in the experiment, and myself, as well. Ultimately, many more people—conscious observers—will be involved."

"Why," Oscar said, smiling, trying to keep from laughing, "I do believe you've gone mad, Martin."

"Have I? Have I indeed, my *dear* Oscar? While I have been driven to distraction by intellectual considerations, why haven't you been driven to distraction by ethical ones?"

"What?" Oscar asked, frowning.

"You are, I believe, trying to locate a vial labelled DERVM-74."

"How did you—"

"Because I stole the vial while looking over your lab. And I cribbed a few of your notes. Now. You're among friends, Oscar. Tell us about DERVM-74. Tell them, or I will."

Oscar looked like a carp out of water for a few seconds. "That's classified," he said. "I refuse."

"DERVM-74," Marty said, "stands for Dangerous Experimental Rhino-Virus, Mutation 74. Oscar does some moonlighting on contract for the government. This is one of his toys. Tell us its nature, Oscar."

"You have the vial?"

"Not any more," Marty said.

"You idiot! That virus is deadly. I was about to destroy it when the culture disappeared. It's of no use to anybody!"

"How, how does it work, Oscar?"

"It has a very long gestation period—about 330 days. Much too long for military uses. After that time, death is certain in ninety-eight percent of those who have contracted it. It can be spread by simple contact, by breathing the air around a contaminated subject." Oscar stood. "I must report this, Martin."

"Sit down." Marty pulled a broken glass tube out of his pocket, with a singed label still wrapped around it. He handed it to Oscar, who paled. "Here's my proof, and you're much too late to stop the experiment."

"Is this all true?" Parkes asked.

"That's the vial," Oscar said.

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"What in *hell* have you done?" I asked, loudly.

The other Radicals were as still as cold agar.

"I made a device which measures a quantum event, in this case the decay of a particle of radioactive Americium. Over a small period of time, I exposed an instrument much like a Geiger counter to the possible effects of this decay. In that time, there was exactly a fifty-fifty chance that a nucleus in the particle would decay, triggering the Geiger counter. If the Geiger counter was triggered, it released the virus contained in this vial into a tightly sealed area. Immediately afterwards, I entered the area, and an hour later, I gave all five of you a tour through the same area. The device was then destroyed, and everything in the chamber sterilized, including the vial. If the virus was not released, it was destroyed along with the experimental equipment. If it was released, then we have all been exposed."

"Was it released?" Fauch asked.

"I don't know. It's impossible to tell—yet."

"Oscar," I said, "there's been a month since Marty did all this. We're all influential people—giving talks, attending meetings, we all travel a fair amount. How many people have been exposed—potentially?"

"It's very contagious," Oscar said. "Simple contact guarantees passage from one vector . . . to another."

Fauch had out his calculator. "Jesus Christ," he said. "If we exposed five people each day, and they went on to expose five more . . . Jesus Christ. By now, everyone on Earth could have it."

"Why did you do this, Marty?" Frederik asked.

"Because if the best mankind can do is come up with an infuriating theory like this to explain the universe, then we should be willing to live or die by our belief in the theory."

"I don't get you," Frederik said.

"You know as well as I. Oscar, is there any way to detect contamination by the virus?"

"None. Marty, that virus was a mistake—useless to everybody. Even my notes were going to be destroyed."

"Not useless to me. That's unimportant now, anyway. Frederik, what I'm saying is, according to theory, nothing has been determined yet. The nucleus may or may not have decayed, but that hasn't been decided. We may have better than a fifty-fifty chance—if we truly believe in the theory."

Parkes stood up and looked out the window. "You should have been more thorough, Marty. You should have researched this thing more completely."

"Why?"

"Because I'm a hypochondriac, you bastard. I have a very difficult time telling whether I'm sick or not."

"What does that have to do with anything?" Oscar asked.

Frederik leaned forward. "What Marty is implying is, since the quantum event hasn't been determined yet, the measurement that will flip it into one state or another is our sickness, or health, about three hundred days from now."

I picked up on the chain of reasoning. "And since Parkes is a hypochondriac, if he believes he's ill, that will flip the event into certainty. It will determine the decay, after the fact—" My head

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began to ache. "Even after the particle has been destroyed, and all other records?"

"If he truly believes he's ill," Marty said. "Or if any of us truly believes. Or if we actually become ill. I'm not sure there's any real difference, in this case."

"So you're going to jeopardize the entire world—" Fauch began, then he started to laugh. "This is a diabolical joke, Martin. You can stop it right here."

"He's not joking," Oscar said, holding up the vial. "That's my handwriting on the label."

"Isn't it a beautiful experiment?" Marty asked, grinning. "It determines so many things. It tells us whether our theory of quantum events is correct, it tells us the rôle of consciousness in determining the universe, and, in Parkes's case, it—"

"Stop it!" Oscar shouted. At that point, we had to restrain the biologist from attacking Marty, who danced away, laughing.

May 17, 1981

Today all of us—except Marty—convened. Frederik and Parkes presented documentary evidence to support the validity of quantum theory, and, perversely enough, the validity of Marty's experiment. The evidence was impressive, but I'm not convinced. Still, it was a marathon session, and we now know more than we ever cared to know about the strange world of the quantum.

The physicists—and Fauch, and Oscar, who is very quiet nowadays—are completely convinced that Marty's nucleus is—or was—in an undetermined state, and that all the causal chains leading to the potential release of the rhinovirus mutation are also in a state of flux. That is, whether the human race will live or die has not been decided yet.

And Parkes is equally convinced that, as soon as the gestation period passes, he will begin having symptoms, and he will feel—however irrationally—that he has contracted the disease. We cannot convince him otherwise.

In one way, we were very stupid. We had Oscar describe the symptoms—the early signs—of the disease to us. If we had thought things out more carefully, we would have withheld the information, at least from Parkes. But since Oscar knows, if he became convinced he had the disease, that would be enough to flip the state, Frederik believes. Or would it? We don't know yet how many of us will need to be convinced. Would Marty alone suffice? Is a consensus necessary? A two-thirds majority?

It all seemed—seems—totally preposterous to me. I've always been suspicious of physicists, and now I know why.

Then Frederik made a horrible proposal.

May 23, 1981

Frederik made the proposal again at today's meeting.

The others considered the proposal seriously. Seeing how serious they were, I tried to make objections but got nowhere. I am completely convinced that there is nothing we can do, that if the nucleus decayed, then we are doomed. In three hundred days, the first signs will appear—backache, headache, sweaty palms, piercing pains behind the

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eyes. If it didn't, we won't. Even Frederik saw the ridiculous nature of his proposal, but he added, "The symptoms aren't that much different from flu, you know. And if just one of us becomes convinced . . ."

Indicating that the flipping of the state, because of human frailty, was almost certainly going to result in release of the virus. Had resulted.

His proposal—I write it down with great difficulty—is that we should all commit suicide, all six of us. Since we are the only ones who know about the experiment, we are the only ones, he feels, who can flip the state, make things certain. Parkes, he says, is particularly dangerous, but we are all potential hypochondriacs. With the strain of almost ten months waiting between now and the potential appearance of symptoms, we may all be near the breaking point.

May 30, 1981

I have refused to go along with them. Everyone has been extremely quiet, stayed away from each other. But I suspect Parkes and Frederik are doing something. Oscar is morose—he seems suicidal anyway, but is too much of a coward to go it alone. Fauch . . . I can't reach him.

—Ah, Christ. Frederik called. He said I can't hold out. They've killed Marty and destroyed the lab building to wipe out all traces of the experiment, so that no one will know it ever took place. The group is coming over to my apartment now. I just have time to put this in the university pickup box. What can I do, run?

They're too close.

Dietrich to Kranz

Carl: I've read the journal, although I'm not sure I've assimilated it. What have you found out about Bernard?

Kranz to Dietrich

Werner: Oscar Bernard was indeed working on a rhinovirus mutation around the time of the incident. I haven't been able to find out much—lots of people in three-piece suits wandering through the corridors over there. But the rumor is that all his notes on certain projects are missing.

Do you believe it? I mean—do you believe the theory enough to agree with me, that word about the journal should end here? I feel both scared and silly.

Dietrich to Kranz

Carl: We have to find out the complete list of symptoms—besides headache, sweaty palms, backache, pains behind the eyes.

Yes. I'm a firm believer in the theory. And if Goa did what the journal says . . . you and I can flip the state.

Anyone who reads this can flip the state.

What in God's name are we going to do? ■

● Pedantry is the overrating (of) any kind of knowledge we pretend to. And if that kind of knowledge be a trifle in itself, the pedantry is the greater.

Jonathan Swift

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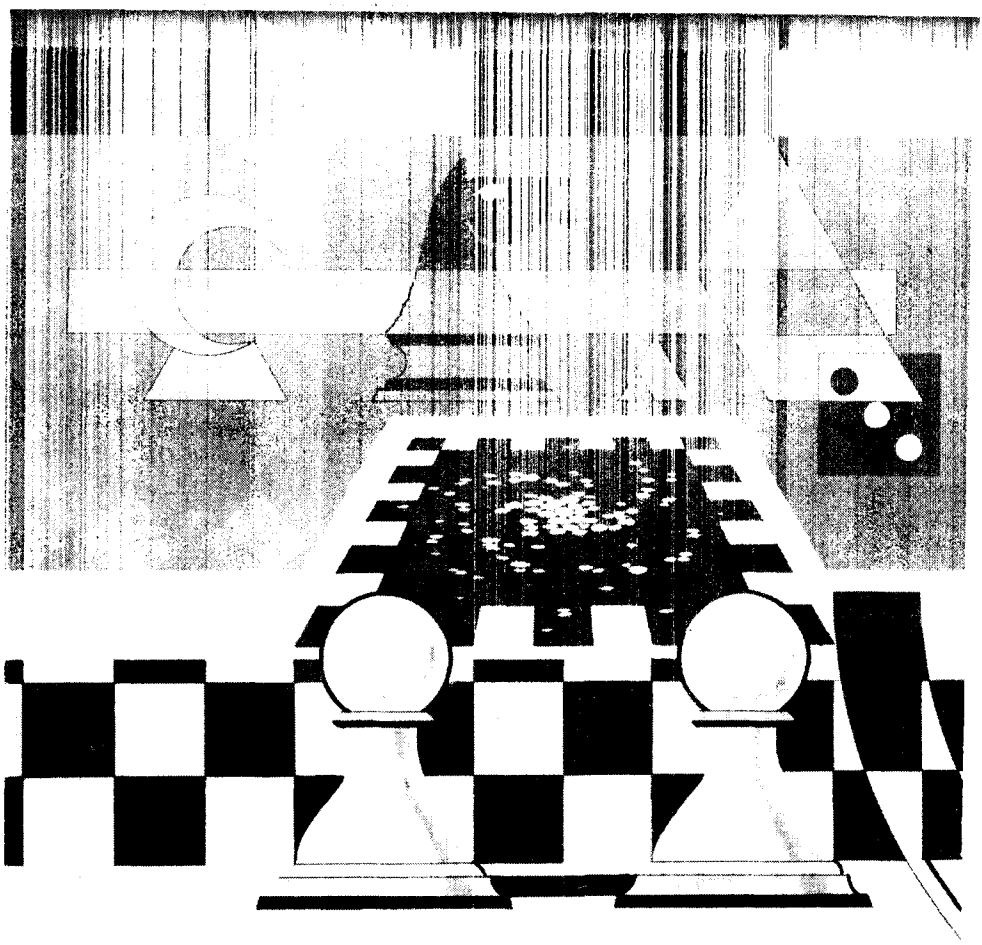

Timothy Zahn

PAWN'S GAMBIT

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Gaming is probably common to many sentient species—and the real opponent in a game is not always who it appears to be.

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To: *Office of Director Rodau 248700, Alien Research Bureau, Clars*
From: *Office of Director Eftis 379214, Games Studies, Var-4*
Subject: *30th annual report, submitted 12 Tai 3829*
Date: *4 Mras 3829*
Dear Rodau,

I know how you hate getting addenda after a report has been processed, but I hope you will make an exception in this case. Our most recently discovered race—the Humans—was mentioned only briefly in our last annual report, but I feel that the data we have since obtained is important enough to bring to your attention right away.

The complete results are given in the enclosed film, but the crux of the problem is a disturbing lack of consistency with standard patterns. In many ways they are unsophisticated, even primitive; most of the subjects reacted with terror and even hysteria when first brought here via Transphere. And yet, unlike most primitives, there is a mental and emotional resilience to the species which frankly surprises me. Nearly all of them recovered from their fear and went on to play the Stage-I game against their fellows. And the imagination, skill, and sheer aggressiveness used in the playing have been inordinately high for such a young species, prompting more than one off-the-record comparison between Humans and the Chanis. I suppose it's that, more than anything else, that made me unwilling to let this data ride until our next report. Confined as they are to their home planet, the Humans are certainly no threat now; but if they prove to be even a twelfth as dangerous as the Chanis they will need to be dealt with swiftly.

Accordingly, I am asking permission to take the extraordinary step of moving immediately to Phase III (the complete proposal is attached to my report). I know this is generally forbidden with non-spacing races, but I feel it is vital that we test Humans against races of established ability. Please give me a decision on this as soon as possible.

Regards,
Eftis

To: *Office of Director Eftis 379214, Game Studies, Var-4*
From: *Office of Director Rodau 248700, A.R.B., Clars*
Subject: *Addendum to 30th annual report*
Date: *34 Forma 3829*
Dear Eftis,

Thank you for your recent addenda. You were quite right to bring these Humans to our attention; that is, after all, what you're out there for.

I find myself, as do you, both interested and alarmed by this race, and I agree totally with your proposal to initiate Phase III. As usual, the authorization tapes will be a few more weeks in coming, but—unofficially—I'm giving you the go-ahead to start your preparations. I also agree with your suggestion that a star-going race be pitted against your Human: an Olyt or Fiwalic, perhaps. I see by your reports that the Olyts are beginning to resent our testing, but don't let that bother you; your results clearly show they are no threat to us.

Do keep us informed, especially if you uncover more evidence of Chani-like qualities in these aliens.

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Sincerely,
Rodau

* * *

The glowing, impenetrable sphere of white mist that had surrounded him for the last five minutes dissolved as suddenly as it had formed, and Kelly McClain found himself in a room he had never seen in his life.

Slowly, carefully, he looked around him, heart pounding painfully in his ears. He'd screamed most of the panic out of his system within the first three minutes of his imprisonment, but he could feel the terror welling up into his throat again. He forced it down as best he could. He was clearly no longer in his office at the university's reactor lab, but losing his head wasn't going to get him back again.

He was sitting in a semicircular alcove facing into a small room, his chair and about three-quarters of his desk having made the trip with him. The room's walls, ceiling, and floor were made of a bronze-colored metal and were devoid of any ornamentation. At the right and left ends of the room he could see panels that looked like sliding doors.

There didn't seem to be a lot to be gained by sitting quietly and hoping everything out there would go away. His legs felt like they might be ready to hold him up again, so he stood up and squeezed his way through the six-inch gap between his desk and the alcove wall. The desk, he noted, had been sheared smoothly, presumably by the white mist or something in it. He went first to the panel in the right-hand wall; but if it *was*, in fact, a door, he could find no way to open it. The left-hand panel yielded identical results. "Hello?" he called tentatively into the air around him. "Can anyone hear me?"

The flat voice came back at him so suddenly it made him jump. "Good day to you, Human," it said. "Welcome to the Stryfkar Game Studies Center on Var-4. I trust you suffered no ill effects from your journey?"

A *game* studies center?

Memories flashed across Kelly's mind, bits of articles he'd seen in various magazines and tabloids over the past few months telling of people kidnapped to a game center by extraterrestrial beings. He'd skimmed some of them for amusement, and had noted the similarity between the stories: humans taken two at a time and made to play a strange board game against one another before being sent home. Typical tabloid tripe, Kelly had thought at the time.

Which made this an elaborate practical joke, obviously.

So how had they made that white mist?

For the moment, it seemed best to play along. "Oh, the trip was fine. A little boring, though."

"You have adjusted to your situation very quickly," the voice said, and Kelly thought he could detect a touch of surprise in it. "My name is Slaich; what is yours?"

"Kelly McClain. You speak English pretty well for an alien—what kind are you, again?"

"I am a Stryf. Our computer-translator is very efficient, and we have had data from several of your fellow Humans."

"Yes, I've heard about them. How come you drag them all the way out

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here—wherever *here* is—just to play games? Or is it a state secret?"

"Not really. We wish to learn about your race. Games are one of the psychological tools we use."

"Why can't you just talk to us? Or, better still, why not drop in for a visit?" Much as he still wanted to believe this was a practical joke, Kelly was finding that theory harder and harder to support. That voice—like no computer speech he'd ever heard, but nothing like a human voice, either—had an uncomfortable ring of casual truth to it. He could feel sweat gathering on his forehead.

"Talking is inefficient for the factors we wish to study," Slaich explained offhandedly. "As to visiting Earth, the Transphere has only limited capacity and we have no long-range ships at our disposal. I would not like to go to Earth alone."

"Why not?" The tension had risen within Kelly to the breaking point, generating a reckless courage. "You can't look *that* bad. Show yourself to me—*right now*."

There was no hesitation. "Very well," the voice said, and a section of the shiny wall in front of Kelly faded to black. Abruptly, a three-dimensional image appeared in front of it—an image of a two-legged, two-armed nightmare. Kelly gasped, head spinning, as the misshapen head turned to face him. An x-shaped opening began to move. "What do you think, Kelly? Would I pass as a Human?"

"I—I—I—" Kelly was stuttering, but he couldn't help it; all his strength was going to control his suddenly rebellious stomach. The creature before him was *real*—no make-up job in the world could turn a man into *that*. And multicolor hologram movies of such size and clarity were years or decades away . . . on Earth.

"I am sorry; I seem to have startled you," Slaich said, reaching for a small control panel Kelly hadn't noticed. The muscles moved visibly under his six-fingered hand as he touched a button. The image vanished and the wall regained its color. "Perhaps you would like to rest and eat," the flat voice went on. The door at Kelly's left slid open, revealing a furnished room about the size of an efficiency apartment. "It will be several hours before we will be ready to begin. You will be called."

Kelly nodded, not trusting his voice, and walked into the room. The door closed behind him. A normal-looking bed sat next to the wall halfway across the room, and Kelly managed to get there before his knees gave out.

He lay face-downward for a long time, his whole body trembling as he cried silently into his pillow. The emotional outburst was embarrassing—he'd always tried to be the strong, unflappable type—but efforts to choke off the display only made it worse. Eventually, he gave up and let it run its course.

By and by, the sobs stopped coming and he found himself more or less rational once more. Rolling onto his side, unconsciously curling into a fetal position, he stared at the bronze wall and tried to think.

For the moment, at least, he seemed to be in no immediate physical danger. From what he remembered of the tabloid articles, the aliens here seemed truly intent on simply doing their psychological study and then sending the partic-

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ipants home. Everything they'd done so far could certainly be seen in that light; no doubt they had monitored his reactions to both their words and Slaich's abrupt appearance. He shuddered at the memory of that alien face, feeling a touch of anger. Psychological test or not, he wasn't going to forgive Slaich very quickly for not giving him some kind of warning before showing himself like that.

The important thing, then, was for him to stay calm and be a good little test subject so he could get home with a minimum of trouble. And if he could do it with a little dignity, so much the better.

He didn't realize he'd dozed off until a soft tone startled him awake. "Yes?"

"It is time," the computerized voice told him. "Please leave your rest chamber and proceed to the test chamber."

Kelly sat up, glancing around him. The room's only door was the one he'd entered by; the test chamber must be out the other door of the room with the alcove. "Where's the other player from?" he asked, swinging his feet onto the floor and heading for the exit. "Or do you just snatch people from Earth at random?"

"We generally set the Transphere to take from the vicinity of concentrated energy sources, preferably fission or fusion reactors when such exist," Slaich said. "However, you have made one false assumption. Your opponent is not a Human."

Kelly's feet froze halfway through the door, and he had to grab the jamb to keep his balance. This was a new twist. "I see. Thanks for the warning, anyway. Uh . . . what *is* he?"

"An Olyt. His race is somewhat more advanced than yours; the Olyts have already built an empire of eight planets in seven stellar systems. They have been studied extensively by us, though their closest world is nearly thirty light-years from here."

Kelly forced his legs to start walking again. "Does that make us neighbors? You never said how far Earth is from here."

"You are approximately forty-eight light-years from here and thirty-six from the Olyt home world. Not very far, as distances go."

The door on the far side of the room opened as Kelly approached. Getting a firm grip on his nerves, he stepped through.

The game room was small and relatively dark, the only illumination coming from a set of dimly glowing red panels. In the center of the room, and taking up a good deal of its floor space, was a complex-looking gameboard on a table. Two chairs—one strangely contoured—completed the furnishings. Across the room was another door, and standing in front of it was an alien.

Kelly was better prepared for the shock this time, and as he stepped toward the table he found his predominant feeling was curiosity. The Olyt was half a head shorter than he, his slender body covered by what looked like large white scales. He was bipedal with two arms, each of his limbs ending in four clawed digits. His snout was long and seemed to have lots of teeth; his eyes were black and set back in a beetle-browed skull. Picture a tailless albino alligator wearing a wide sporran, Sam Browne belt, and a beret. . . .

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Kelly and the Olyt reached their respective sides of the game table at about the same time. The board was smaller than it had first looked; the alien was little more than a double arm-length away. Carefully, Kelly raised his open hand, hoping the gesture would be properly interpreted. "Hello. I'm Kelly McClain; human."

The alien didn't flinch or dive down Kelly's throat. He extended both arms, crossed at the wrists, and Kelly discovered the claws were retractable. His mouth moved, generating strange noises; seconds later the computer's translation came over an invisible speaker. "I greet you. I am Tlaymasy of the Olyt race."

"Please sit down," Slaich's disembodied voice instructed. "You may begin when you have decided on the rules."

Kelly blinked. "How's that?"

"This game has no fixed rules. You must decide between you as to the objective and method of play before you begin."

Tlaymasy was speaking again. "What is the purpose of this?"

"The purpose is to study an interaction between Olyt and Human," Slaich said. "Surely you have heard of this experiment from others of your race."

Kelly frowned across the table. "You've been through this before?"

"Over one hundred twenty-eight members of my race have been temporarily taken over the last sixteen years," the Olyt said. Kelly wished he could read the alien's expression. The computer's tone was neutral, but the words themselves sounded a little resentful. "Some have spoken of this game with no rules. However, my question referred to the stakes."

"Oh. They are as usual for this study: the winner is allowed to return home."

Kelly's heart skipped a beat. "*Wait* a minute. Where did *that* rule come from?"

"The rules and stakes are chosen by us," Slaich said flatly.

"Yes, but . . . What happens to the loser?"

"He remains to play against a new opponent."

"What if I refuse to play at all?"

"That is equivalent to losing."

Kelly snorted, but there wasn't much he could do about it. *With dignity,* he thought dryly, and began to study the game board.

It looked like it had been designed to handle at least a dozen widely differing games. It was square, with two five-color bands of squares running along its edge; one with a repeating pattern, the other apparently random. Inside this was a checkerboard-type design with sets of concentric circles and radial lines superimposed on it. To one side of the board itself sat a stack of transparent plates, similarly marked, and a set of supporting legs for them; to the other side were various sizes, shapes, and colors of playing pieces, plus cards, multisided dice, and a gadget with a small display screen. "Looks like we're well equipped," he remarked to the Olyt, who seemed also to be studying their equipment. "I guess we could start by choosing which set of spaces to use. I suggest the red and—is that color blue?—the square ones." He indicated the checkerboard.

"Very well," Tlaymasy said. "Now

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we must decide on a game. Are you familiar with *Four-Ply*?''

''I doubt it, but my people may have something similar. Describe the rules.''

Tlaymasy proceeded to do so. It sounded a little like go, but with the added feature of limited mobility for the pieces once on the board. ''Sounds like something I'd have a shot at,'' Kelly said after the alien had demonstrated some of the moves with a butterfly-shaped playing piece. ''Of course, you've got a big advantage, since you've played it before. I'll go along on two conditions: first, that a third-level or fourth-level attack must be announced one move before the attack is actually launched.''

''That eliminates the possibility of surprise attacks,'' Tlaymasy objected.

''Exactly. Come on, now, you know the game well enough to let me have that, don't you?''

''Very well. Your second condition?''

''That we play a practice game first. In other words, the *second* game we play will determine who gets to go home. Is that permissible?'' he added, looking up at one of the room's corners.

''Whatever is decided between you is binding,'' Slaich replied.

Kelly cocked an eyebrow at his opponent. ''Tlaymasy?''

''Very well. Let us begin.''

It wasn't such a hard game to learn, Kelly decided, though he got off to a bad start and spent most of their practice game on the defensive. The strategy Tlaymasy was using was not hard to pick up, and by the time they finished he found he could often anticipate the Olyt's next move.

''An interesting game,'' Kelly commented as they retrieved their playing pieces from the board and prepared to play again. ''Is it popular on your world?''

''Somewhat. The ancients used it for training in logic. Are you ready to begin?''

''I guess so,'' Kelly said. His mouth felt dry.

This time Kelly avoided the errors he'd made at the beginning of the practice game, and as the board filled up with pieces he found himself in a position nearly as strong as Tlaymasy's. Hunching over the board, agonizing over each move, he fought to maintain his strength.

And then Tlaymasy made a major mistake, exposing an arm of his force to a twin attack. Kelly pounced, and when the dust of the next four moves settled he had taken six of his opponent's pieces—a devastating blow.

A sudden, loud hiss made Kelly jump. He looked up, triumphant grin vanishing. The Olyt was staring at him, mouth open just enough to show rows of sharp teeth. Both hands were on the table, and Kelly could see the claws sliding in and out of their sheaths. ''Uh . . . anything wrong?'' he asked cautiously, muscles tensing for emergency action.

For a moment there was silence. Then Tlaymasy closed his mouth and his claws retracted completely. ''I was upset by the stupidity of my play. It has passed. Let us continue.''

Kelly nodded and returned his gaze to the board, but in a far more subdued state of mind. In the heat of the game, he had almost forgotten he was playing

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for a ticket home. Now, suddenly, it looked as if he might be playing for his life as well. Tlaymasy's outburst had carried a not-so-subtle message: the Olyt did not intend to accept defeat graciously.

The play continued. Kelly did the best he could, but his concentration was shot all to hell. Within ten moves Tlaymasy had made up his earlier loss. Kelly sneaked glances at the alien as they played, wondering if that had been Tlaymasy's plan all along. Surely he wouldn't physically attack Kelly while he himself was a prisoner on an unknown world . . . would he? Suppose, for example, that honor was more important to him than even his own life, and that honor precluded losing to an alien?

A trickle of sweat ran down the middle of Kelly's back. He had no evidence that Tlaymasy thought that way . . . but on the other hand he couldn't come up with any reasons why it shouldn't be possible. And that reaction had looked *very* unfriendly.

The decision was not difficult. Discretion being the better part and all that—and a few extra days here wouldn't hurt him. Deliberately, he launched a bold assault against Tlaymasy's forces, an attack which would require dumb luck to succeed.

Dumb luck, as usual, wasn't with him. Seven moves later, Tlaymasy had won.

"The game is over," Slaich's voice boomed. "Tlaymasy, return to your Transphere chamber and prepare to leave. Kelly McClain, return to your rest chamber."

The Olyt stood and again gave Kelly his crossed-wrists salute before turning and disappearing through his sliding door. Kelly sighed with relief and emotional fatigue and headed back toward his room. "You played well for a learner," Slaich's voice followed him.

"Thanks," Kelly grunted. Now, with Tlaymasy's teeth and claws no longer a few feet in front of him, he was starting to wonder if maybe he shouldn't have thrown the game. "When do I play next?"

"In approximately twenty hours. The Transphere must be reset after the Olyt is returned to his world."

Kelly had been about to step into his rest chamber. "Twenty hours?" he echoed, stopping. "Just a second." He turned toward the alcove where his desk was sitting—but had barely taken two steps when a flash of red light burst in front of him. "Hey!" he yelped, jumping backwards as heat from the blast washed over him. "What was *that* for?"

"You may not approach the Transphere apparatus." Slaich's voice had abruptly taken on a whiplash bite.

"Nuts! If I'm being left to twiddle my thumbs for a day I want the books that are in my desk."

There was a momentary silence, and when Slaich spoke again his tone had moderated. "I see. I suppose that is all right. You may proceed."

Kelly snorted and walked forward warily. No more bursts of light came. Squeezing around to the front of his desk, he opened the bottom drawer and extracted three paperbacks, normally kept there for idle moments. From another drawer came a half-dozen journals that he'd been meaning to read; and finally, as an afterthought, he scooped up

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a couple of pens and a yellow legal pad. Stepping back to the center of the room, he held out his booty. "See? Perfectly harmless. Not a single neutron bomb in the lot."

"Return to your rest chamber." Slaich did not sound amused.

With the concentration needed during the game, Kelly had temporarily forgotten he'd missed both lunch and dinner. Now, though, his growling stomach was demanding attention. Following Slaich's instructions, he requested and obtained a meal from the automat-type slots in one wall of his cubicle. The food was bland but comfortably filling, and Kelly felt his spirits rising as he ate. Afterwards, he chose one of his paperbacks and stretched out on the bed. But instead of immediately beginning to read, he stared at the ceiling and thought.

Obviously, there could be no further question that what was happening to him was real. Similarly, there was no reasonable hope that he could escape his captors. There were no apparent exits from the small complex of rooms except via the Transphere, whose machinery was hidden behind metal walls and was probably incomprehensible anyway. He had only Slaich's word that the Stryfkar intended to send him home, but since they apparently had made—and kept—similar promises to other humans, he had no real reason to doubt them. True, the game rules this time seemed to be different, but Tlaymasy had implied the Stryfkar had pulled this on several of his own race and had released them on schedule. So the big question, then, was whether or not Kelly could win the next game he would have to play.

He frowned. He'd never been any great shakes as a games player, winning frequently at chess but only occasionally at the other games in his limited repertoire. And yet, he'd come surprisingly close today to beating an alien in his own game. An alien, be it noted, whose race held an empire of eight worlds. The near-victory could be meaningless, of course—Tlaymasy might have been the equivalent of a fourth-grader playing chess, for instance. But the Olyt would have had to be a complete idiot to suggest a game he wasn't good at. And there was also Slaich's reaction after the game; it was pretty clear the Stryf hadn't expected Kelly to do that well. Did that mean that Kelly, average strategist that he was, was still better than the run-of-the-mill alien?

If that was true, his problems were essentially over. Whoever his next opponent was, it should be relatively easy to beat him, especially if they picked a game neither player had had much experience with. Four-Ply might be a good choice if the new testee wasn't another Olyt; the game was an interesting one and easy enough to learn, at least superficially. As a matter of fact, it might be worth his while to try marketing it when he got home. The game market was booming these days, and while Four-Ply wasn't likely to make him rich, it could conceivably bring in a little pocket change.

On the other hand . . . what was his hurry?

Kelly squirmed slightly on the bed as a rather audacious idea struck him. If he really *was* better than most other aliens, then it followed that he could go home most any time he wanted, simply by winning whichever game he was on

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at the moment. And if *that* were true, why not stick around for another week or so and learn a few more alien games?

The more he thought about it, the more he liked the idea. True, there was an element of risk involved, but that was true of any money-making scheme. And it couldn't be *that* risky—this was a *psychology* experiment, for crying out loud! "Slaich?" he called at the metallic ceiling.

"Yes?"

"If I lose my next game, what happens?"

"You will remain here until you have won or until the test is over."

So it didn't sound like he got punished or anything if he kept losing. The Stryfkar had set up a pretty simple-minded experiment here, to his way of thinking. Human psychologists would probably have put together something more complicated. Did that imply humans were better strategists than even the Stryfkar?

An interesting question, but for the moment Kelly didn't care. He'd found a tiny bit of maneuvering space in the controlled environment they'd set up, and it felt very satisfying. Rules like these, in his book, were made to be bent.

And speaking of rules . . . Putting aside his paperback, Kelly rolled off the bed and went over to the cubicle's folding table. Business before pleasure, he told himself firmly. Picking up a pen and his legal pad, he began to sketch the Four-Ply playing board and to list the game's rules.

* * *

To: *Office of Director Rodau 248700, A.R.B., Clars*
From: *Office of Director Eftis 379214, Game Studies, Var-4*
Subject: *Studies of Humans*
Date: *3 Lysmo 3829*

Dear Rodau,

The Human problem is taking on some frightening aspects, and we are increasingly convinced that we have stumbled upon another race of Chanis. Details will be transmitted when all analyses are complete, but I wanted to send you this note first to give you as much time as possible to recommend an assault force, should you deem this necessary.

As authorized, we initiated a Phase III study eight days ago. Our Human has played games against members of four races: an Olyt, a Fiwalic, a Spromsa, and a Thim-fra-chee. In each case the game agreed upon has been one from the non-Human player's world, with slight modifications suggested by the Human. As would be expected, the Human has consistently lost—but in each case he has clearly been winning until the last few moves. Our contact specialist, Slaich 898661, suggested early on that the Human might be *deliberately* losing; but with both his honor and his freedom at stake Slaich could offer no motive for such behavior. However, in a conversation of 1 Lysmo (tape enclosed) the Human freely confirmed our suspicions and indicated the motive was material gain. He is using the testing sessions to study his opponents' games, expecting to introduce them for profit on returning to his world.

I'm sure you will notice the similarities to Chani psychology: the desire for profit, even at the casual risk of his safety, and the implicit belief that his

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skills are adequate to bring release whenever he wishes. History shows us that, along with their basic tactical skills, it was just these characteristics that drove the Chanis in their most unlikely conquests. It must also be emphasized that the Human shows no signs of military or other tactical training and must therefore be considered representative of his race.

Unless further study uncovers flaws in their character which would preclude an eventual Chani-like expansion, I personally feel we must consider annihilation for this race as soon as possible. Since we obviously need to discover the race's full strategic capabilities—and since our subject refuses to cooperate—we are being forced to provide a stronger incentive. The results should be enlightening, and will be sent as soon as they are available.

Regards,
Eftis

* * *

The door slid back and Kelly stepped into the test chamber, looking across the room eagerly to see what sort of creature he'd be competing against this time. The dim red lights were back on in the room, indicating someone from a world with a red sun, and as Kelly's eyes adjusted to the relative darkness he saw another of the alligator-like Olyts approaching the table. "I greet you," Kelly said, making the crossed-wrist gesture he'd seen at his first game here. "I am Kelly McClain of the human race."

The Olyt repeated the salute. "I am *ulur* Achranae of the Olyt race."

"Pleased to meet you. What does *ulur* mean?"

"It is a title of respect for my position. I command a war-force of seven spacecraft."

Kelly swallowed. A trained military man. Good thing he wasn't in a hurry to win and go home. "Interesting. Well, shall we begin?"

Achranae sat down. "Let us make an end to this charade quickly."

"What do you mean, 'charade'?" Kelly asked cautiously as he took his seat. He was by no means an expert on Olyt expressions and emotions, but he could swear this one was angry.

"Do not deny your part," the alien snapped. "I recognize your name from the reports, and know how you played this game for the Stryfkar against another of my people, studying him like a laboratory specimen before allowing him to win and depart. We do not appreciate the way you take our people like this—"

"Whoa! Wait a second; I'm not with them. They've been taking *my* people, too. It's some sort of psychology experiment, I guess."

The Olyt glared at him in silence for a long moment. "If you truly believe that, you are a fool," he said at last, sounding calmer. "Very well; let us begin."

"Before you do so we must inform you of an important change in the rules," Slaich's voice cut in. "You shall play *three* different games, instead of one, agreeing on the rules before beginning each. The one who wins two or more shall be returned home. The other will lose his life."

It took a second for that to sink in. "*What?*" Kelly yelped. "You can't do that!" Across the table Achranae gave a soft, untranslatable hiss. His claws,

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fully extended, scratched lightly on the game board.

"It is done," Slaich said flatly. "You will proceed now."

Kelly shot a frustrated glance at Achranae, looked up again. "We will not play for our lives. That sort of thing is barbarous, and we are both civilized beings."

"Civilized." Slaich's voice was thick with sudden contempt. "You, who can barely send craft outside your own atmosphere; you consider yourself *civilized?* And your opponent is little better."

"We govern a sphere fifteen light-years across," Achranae reminded Slaich calmly, his outburst of temper apparently over. For all their short fuses, Kelly decided, Olyts didn't seem to stay mad long.

"Your eight worlds are nothing against our forty."

"It is said the Chanis had only five when they challenged you."

The silence from the speaker was impressively ominous. "What are the Chanis?" Kelly asked, fighting the urge to whisper.

"It is rumored they were a numerically small but brutally aggressive race who nearly conquered the Stryfkar many generations ago. We have heard these stories from traders, but do not know how true they are."

"True or not, you sure hit a nerve," Kelly commented. "How about it, Slaich? Is he right?"

"You will proceed now," Slaich ordered, ignoring Kelly's question.

Kelly glanced at Achranae, wishing he could read the other's face. Did Olyts understand the art of bluffing? "I said we wouldn't play for our lives."

In answer a well-remembered flash of red light exploded inches from his face. Instinctively, he pushed hard on the table, toppling himself and his chair backwards. He hit hard enough to see stars, somersaulted out of the chair, and wound up lying on his stomach on the floor. Raising his head cautiously, he saw the red fireball wink out and, after a moment, got warily to his feet. Achranae, he noted, was also several feet back from the table, crouching in what Kelly decided was probably a fighting stance of some kind.

"If you do not play, both of you will lose your lives." Slaich's voice was mild, almost emotionless, but it sent a shiver down Kelly's spine. Achranae had been right: this was no simple psychology experiment. The Stryfkar were searching for potential enemies—and somehow both humans and Olyts had made it onto their list. And there was *still* no way to escape. Looking across at Achranae, Kelly shrugged helplessly. "Doesn't look like we have much choice, does it?"

The Olyt straightened up slowly. "For the moment, no."

"Since this contest is so important to both of us," Kelly said when they were seated again, "I suggest that you choose the first game, allowing me to offer changes that will take away some of your advantage—changes we both have to agree on, of course. I'll choose the second game; you'll suggest changes on that one."

"That seems honorable. And the third?"

"I don't know. Let's discuss that one when we get there, okay?"

It took nearly an hour for the first

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game, plus amendments, to be agreed upon. Achranae used three of the extra transparencies and their supports to create a three-dimensional playing area; the game itself was a sort of 3-D "Battleship," but with elements of chess, Monopoly, and even poker mixed in. Surprisingly enough, the mixture worked, and if the stakes hadn't been so high Kelly thought he would have enjoyed playing it. His own contributions to the rules were a slight adjustment to the shape of the playing region—which Kelly guessed would change the usual positional strategies—and the introduction of a "wild card" concept to the play. "I also suggest a practice game before we play for keeps," he told Achranae.

The Olyt's dark eyes bored into his. "Why?"

"Why not? I've never played this before, and you've never played with these rules. It would make the actual game fairer. More honorable. We'll do the same with the second and third games."

"Ah—it is a point of honor?" The alien cocked his head to the right. A nod? "Very well. Let us begin."

Even with the changes, the game —Skymarch, Achranae called it—was still very much an Olyt one, and Achranae won the practice game handily. Kelly strongly suspected Skymarch was a required course of the aliens' space academy; it looked too much like space warfare to be anything else.

"Did the Stryf speak the truth when he said you were not starfarers?" Achranae asked as they set up the board again.

"Hm? Oh, yes," Kelly replied distractedly, his mind on strategy for the coming game. "We've hardly even got simple spacecraft yet."

"Surprising, since you learn space warfare tactics so quickly." He waved his sheathed claws over the board. "A pity, too, since you will not be able to resist if the Stryfkar decide to destroy you."

"I supppose not, but why would they want to? We can't be any threat to them."

Again Achranae indicated the playing board. "If you are representative, your race is unusually gifted with both tactical skill and aggressiveness. Such abilities would make you valuable allies or dangerous adversaries to any starfaring race."

Kelly shrugged. "You'd think they'd try to recruit us, then."

"Unlikely. The Stryfkar are reputed to be a proud race who have little use for allies. This harassment of both our peoples should indicate their attitude toward other races."

The Olyt seemed to be on the verge of getting angry again, Kelly noted uneasily. A change in subject seemed in order. "Uh, yes. Shall we begin our game?"

Achranae let out a long hiss. "Very well."

From the very beginning it was no contest. Kelly did his best, but it was clear that the Olyt was able to *think* three-dimensionally better than he could. Several times he lost a piece simply because he missed some perfectly obvious move it could have made. Sweating, he tried to make himself slow down, to spend more time on each move. But it did no good. Inexorably,

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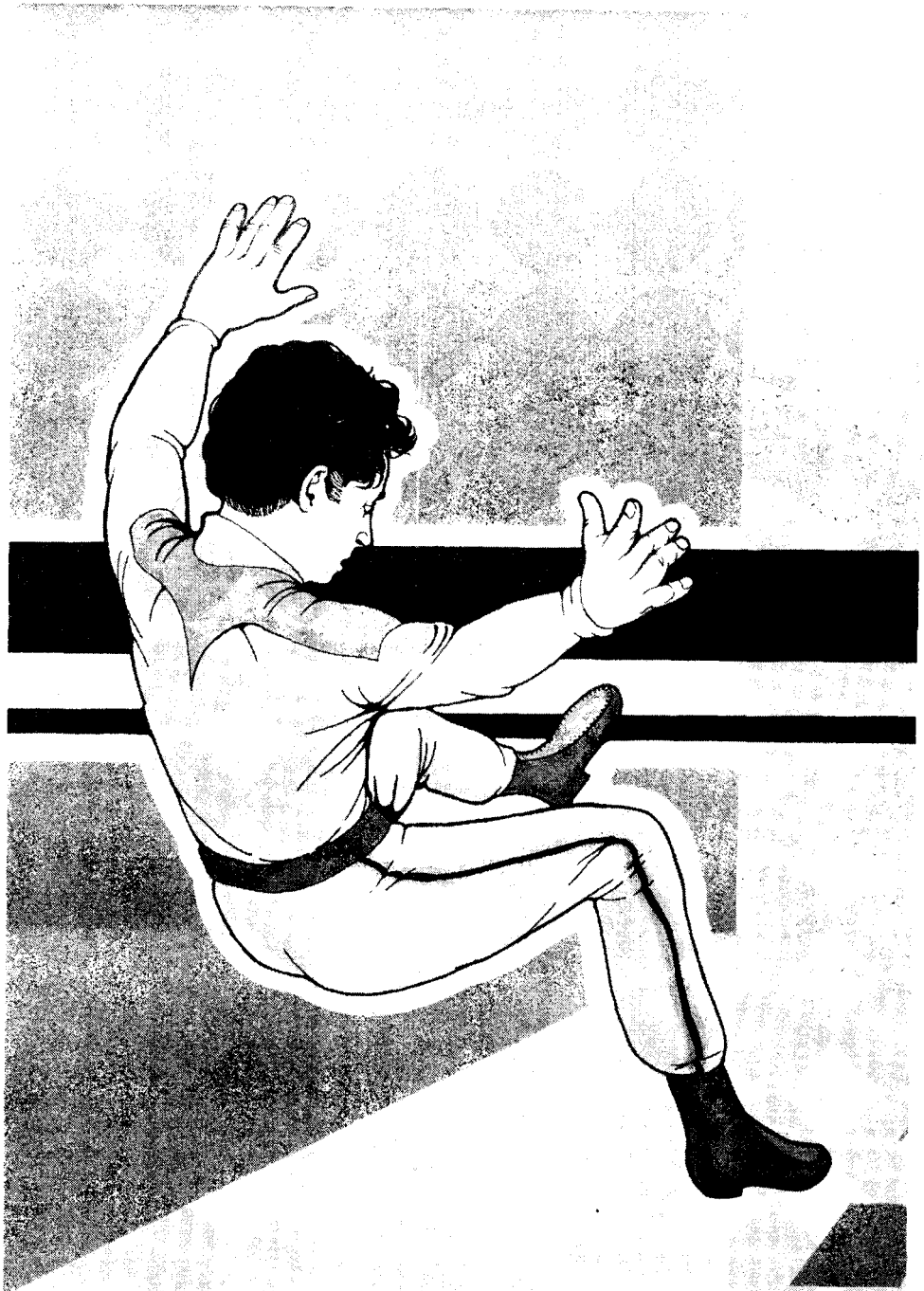

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Achranae tightened the noose; and, too quickly, it was all over.

Kelly leaned back in his chair, expelling a long breath. It was all right, he told himself—he had to expect to lose a game where the alien had all the advantages. The next game would be different, though; Kelly would be on his own turf, with *his* choice of weapons—

"Have you chosen the game we shall play next?" Achranae asked, interrupting Kelly's thoughts.

"Idle down, will you?" Kelly snapped, glaring at the alien. "Give me a minute to think."

It wasn't an easy question. Chess was far and away Kelly's best game, but Achranae had already showed himself a skilled strategist, at least with warfare-type games. That probably made chess a somewhat risky bet. Card games involved too much in the way of chance; for this second game Kelly needed as much advantage as he could get. Word games like Scrabble were obviously out. Checkers or Dots were too simple. Backgammon? That was a pretty nonmilitary game, but Kelly was a virtual novice at it himself. How about—

How about a *physical* game?

"Slaich? Could I get some extra equipment in here? I'd like a longer table, a couple of paddles, a sort of light, bouncy ball—"

"Games requiring specific physical talents are by their nature unfair for such a competition as this," Slaich said. "They are not permitted."

"I do not object," Achranae spoke up unexpectedly, and Kelly looked at him in surprise. "You stated we could choose the games and the rules, and it is Kelly McClain's choice this time."

"We are concerned with psychological studies," Slaich said. "We are not interested in the relative abilities of your joints and muscles. You will choose a game that can be played with the equipment provided."

"It is dishonorable—"

"No, it's okay, Achranae," Kelly interrupted, ashamed at himself for even suggesting such a thing. "Slaich is right; it would've been completely unfair. It was dishonorable for me to suggest it. Please accept my apology."

"You are blameless," the Olyt said. "The dishonor is in those who brought us here."

"Yes," Kelly agreed, glancing balefully at the ceiling. The point was well taken. Achranae wasn't Kelly's enemy; merely his opponent. The Stryfkar were the real enemy.

For all the good that knowledge did him.

He cleared his throat. "Okay, Achranae, I guess I'm ready. This game's called *chess*. . . ."

The Olyt picked up the rules and movements quickly, enough so that Kelly wondered if the aliens had a similar game on their own world. Fortunately, the knight's move seemed to be a new one on him, and Kelly hoped it would offset the other's tactical training. As his contribution, Achranae suggested the pawns be allowed to move backwards as well as forwards. Kelly agreed, and they settled into their practice game.

It was far harder than Kelly had expected. The "reversible pawn" rule caused him tremendous trouble, mainly because his logic center kept editing it out of his strategy. Within fifteen moves

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he'd lost both bishops and one of his precious knights, and Achranae's queen was breathing down his neck.

"An interesting game," the Olyt commented a few moves later, after Kelly had managed to get out from under a powerful attack. "Have you had training in its technique?"

"Not really," Kelly said, glad to take a breather. "I just play for enjoyment with my friends. Why?"

"The test of skill at a game is the ability to escape what appears to be certain defeat. By that criterion you have a great deal of skill."

Kelly shrugged. "Just native ability, I guess."

"Interesting. On my world such skills must be learned over a long period of time." Achranae indicated the board. "We have a game similar in some ways to this one; if I had not studied it I would have lost to you within a few moves."

"Yeah," Kelly muttered. He'd been pretty sure Achranae wasn't running on beginner's luck, but he'd sort of hoped he was wrong. "Let's get back to the game, huh?"

In the end Kelly won, but only because Achranae lost his queen to Kelly's remaining knight and Kelly managed to take advantage of the error without any major goofs of his own.

"Are you ready to begin the actual game?" Achranae asked when the board had been cleared.

Kelly nodded, feeling a tightness in his throat. This was for all the marbles. "I suppose so. Let's get it over with."

Using one of the multifaced dice they determined the Olyt would have the white pieces. Achranae opened with his king's pawn, and Kelly responded with something he dimly remembered being called a Sicilian defense. Both played cautiously and defensively; only two pawns were taken in the first twenty moves. Sweating even in the air-conditioned room, Kelly watched his opponent gradually bring his pieces into attacking positions as he himself set his defense as best he could.

When the assault came it was devastating in its slaughter. By the time the captures and recaptures were done, eight more pieces were gone . . . and Kelly was a rook down.

Brushing a strand of hair out of his eyes with a trembling hand, Kelly swallowed hard as he studied the board. Without a doubt, he was in trouble. Achranae controlled the center of the board now and his king was better defended than Kelly's. Worse yet, he seemed to have mastered the knight's move, while Kelly was still having trouble with his pawns. And if the Olyt won this one . . .

."Are you distressed?"

Kelly started, looked up at his opponent. "Just a—" His voice cracked and he tried again. "Just nervous."

"Perhaps we should cease play for a time, until you are better able to concentrate," Achranae suggested.

The last thing Kelly wanted at the moment was the alien's charity. "I'm all right," he said irritably.

Achranae's eyes were unblinking. "In that case, I would like to take a few minutes of rest myself. Is this permissible?"

Kelly stared back as understanding slowly came. Clearly, Achranae didn't need a break; he was a game and a half toward going home. Besides which,

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Kelly *knew* what an upset Olyt looked like, and Achranae showed none of the symptoms. No, giving Kelly the chance to calm down could only benefit the human . . . and as he gazed at the alien's face, Kelly knew the Olyt was perfectly aware of that.

"Yes," Kelly said at last. "Let's take a break. How about returning in a half-hour or so?"

"Acceptable." Achranae stood and crossed his wrists. "I shall be ready whenever you also are."

The ceiling over Kelly's bed was perfectly flat, without even so much as a ripple to mar it. Nonetheless, it reflected images far more poorly than Kelly would have expected. He wondered about it, but not very hard. There were more important things to worry about.

Pulling his left arm from behind his head, he checked the time. Five more minutes and Slaich would sound the little bell that would call them back to the arena. Kelly sighed.

What was he going to *do?*

Strangely enough, the chess game was no longer his major concern. True, he was still in trouble there, but the rest period had done wonders for his composure, and he had already come up with two or three promising lines of attack. As long as he kept his wits around him, he had a fair chance of pulling a win out of his current position. And that was Kelly's real problem . . . because if he did, in fact, win, there would have to be a third game. A game either he or Achranae would have to lose.

Kelly didn't want to die. He had lots of high-sounding reasons why he ought to stay alive—at least one of which, the fact that no one else on Earth knew of the threat lurking behind these "games," was actually valid—but the plain fact was that he simply didn't *want* to die. Whatever the third game was chosen to be, he knew he would play just as hard and as well as he possibly could.

And yet . . .

Kelly squirmed uncomfortably. Achranae didn't deserve to die, either. Not only was he also an unwilling participant in this crazy arena, but he had deliberately thrown away his best chance to win the contest. Perhaps it was less a spirit of fairness than one of obedience to a rigid code of honor that had kept him from capitalizing on his opponent's momentary panic; Kelly would probably never know one way or the other. But it really didn't matter. If Kelly went on to win the chess game he would owe his victory to Achranae.

The third game . . .

What would be the fairest way to do it? Invent a game together that neither had played before? That would pit Kelly's natural tactical abilities against Achranae's trained ones and would probably be pretty fair. On the other hand, it would give the Stryfkar another chance to study them in action, and Kelly was in no mood to cooperate with his captors any more than necessary. Achranae, Kelly had already decided, seemed to feel the same way. He wondered fleetingly how long the Stryfkar had been snatching Achranae's people, and why they hadn't retaliated. Probably had no idea where this game studies center was, he decided; the Transphere's operations would, by design, be difficult to trace. But if he and Ach-

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ranae didn't want to give the Stryfkar any more data, their only alternative was to make the rubber game one of pure chance, and Kelly rebelled against staking his life on the toss of a coin.

The tone, expected though it was, startled him, "It is time," Slaich's flat voice announced. "You will return to the test chamber."

Grimacing, Kelly got to his feet and headed for the door. Maybe Achranae would have some ideas.

"Are you better prepared to play now?" the Olyt asked when they again faced each other over the board.

"Yes," Kelly nodded. "Thanks for suggesting a break. I really *did* need it."

"I sensed that your honor did not permit you to make the request." The alien gestured at the board. "I believe it is your move."

Sure enough, now that his nerves were under control, Kelly began to chip away at Achranae's position, gradually making up his losses and taking the offensive once more. Gambling on the excessive value the Olyt seemed to place in his queen, Kelly laid a trap, with his own queen as the bait. Achranae bit . . . and five moves later Kelly had won.

"Excellent play," the Olyt said, with what Kelly took to be admiration. "I was completely unprepared for that attack. I was not wrong; you have an uncanny tactical ability. Your race will indeed be glorious starfarers someday."

"Assuming we ever get off our own world, of course," Kelly said as he cleared the board. "At the moment we're more like pawns ourselves in this game."

"You have each won once," Slaich spoke up. "It is time now to choose the rules for the final game."

Kelly swallowed and looked up to find Achranae looking back at him. "Any ideas?" he asked.

"None that is useful. A game of chance would perhaps be fairest. Beyond that, I have not determined what my duty requires."

"What are the possibilities?"

"That I should survive in order to return to my people, or that I should not, to allow you that privilege."

"A pity we can't individually challenge the Stryfkar to duels," Kelly said wryly.

"That would be satisfying," Achranae agreed. "But I do not expect they would accept."

There was a long silence . . . and an idea popped into Kelly's mind, practically full-blown. A risky idea—one that could conceivably get them *both* killed. But it might just work . . . and otherwise one of them would certainly die. Gritting his teeth, Kelly took the plunge. "Achranae," he said carefully, "I believe I have a game we can play. Will you trust me enough to accept it *now*, before I explain the rules, and to play it without a practice game?"

The Olyt's snout quivered slightly as he stared across the table in silence. For a long moment the only sound Kelly could hear was his own heartbeat. Then, slowly, Achranae cocked his head to the right. "Very well. I believe you to be honorable. I will agree to your conditions."

"Slaich? You still holding to the rules you set up?" Kelly called.

"Of course."

"Okay." Kelly took a deep breath.

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"This game involves two rival kingdoms and a fire-breathing creature who harasses them both. Here's the creature's underground chamber." He placed a black marker on the playing board, then picked up three of the transparent plates and their supports and set them up. "The two kingdoms are called the Mountain Kingdom and the Land City. The Mountain Kingdom is bigger; here's its center and edge." He placed a large red marker on the top plate and added a ring of six smaller ones around it, two squares away. Moving the black marker slightly so that it was directly under one edge of the ring, he picked up a large yellow marker. "This is the Land City," he identified it, moving it slowly over the middle transparency as his eyes flickered over the board. Ten centimeters between levels, approximately; four per square . . . he put the yellow marker eight squares from the red one and four squares to one side. It wasn't perfect, but it was close and would have to do. "Finally, here are our forces." He scattered a dozen each red and yellow butterfly-shaped pieces in the space between the two kingdoms. "The conditions for victory are twofold: the creature must be dead, and there can be no forces from the opposing side threatening your kingdom. Okay?"

"Very well," Achranae said slowly, studying the board carefully. Once again Kelly wished he had a better grasp of Olyt expressions. "How are combat results decided?"

"By the number of forces involved plus a throw of the die." Making up the rules as he went along, Kelly set up a system that allowed combat between any two of the three sides—and that would require nearly all of both kingdoms' forces combined to defeat the creature with any certainty. "Movement is two squares or one level per turn, and you can move all your forces each turn," he concluded. "Any questions?"

Achranae's eyes bored unblinkingly into his, as if trying to read Kelly's mind. "No. Which of us moves first?"

"I will, if you don't mind." Starting with the pieces closest to the Olyt's kingdom, Kelly began moving them away from the red marker and toward the black one. Achranae hesitated somewhat when it was his turn, but he followed Kelly's example in moving his forces downward. Two of them landed within striking range of some of Kelly's; but the human ignored them, continuing onward instead. Within a few more moves the yellow and red pieces had formed a single mass converging on the black marker.

The fire-breathing creature never had a chance.

"And now . . . ?" Achranae sat stiffly in his chair, his claws about halfway out of their sheaths. The creature had been eliminated on the Olyt's turn, making it Kelly's move . . . and Achranae's forces were still intermixed with the human's. A more vulnerable position was hard to imagine, and Achranae clearly knew it.

Kelly gave him a tight smile and leaned back in his seat. "Well, the creature's dead—and in their present positions none of your forces can threaten my kingdom. So I guess I've won."

There was a soft hiss from the other side of the table, and Achranae's claws slid all the way out. Kelly held his

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breath and tensed himself to leap. Surely Achranae was smart enough to see it . . . and, abruptly, the claws disappeared. "But my kingdom is *also* not threatened," the Olyt said. "Therefore I, too, have won."

"Really?" Kelly pretended great amazement. "I'll be darned. You're *right*. Congratulations." He looked at the ceiling. "Slaich? By a remarkable coincidence we've both won the third game, so I guess we both get to go home. Ready any time you are."

"No." The Stryf's flat voice was firm.

A golf-ball-sized lump rose into Kelly's throat. "Why not? You said anyone who won two games would be sent home. You set up that rule yourself."

"Then the rule is changed. Only one of you can be allowed to leave. You will choose a new game."

Slaich's words seemed to hang in the air like a death sentence . . . and Kelly felt his fingernails digging into his palms. He really hadn't expected the aliens to let him twist their rules to his advantage—he already knew this was no game to them. But he'd still hoped . . . and now he had no choice but to gamble his last card. "I won't play any more games," he said bluntly. "I'm sick of being a pawn in this boogeyman hunt of yours. You can all just take a flying leap at yourselves."

"If you do not play you will lose by forfeit," Slaich reminded him.

"Big deal," Kelly snorted. "You're going to wipe out Earth eventually anyway, aren't you? So what the hell difference does it make where I die?"

There was a short pause. "Very well. You yourself have chosen. Achranae, return to your Transphere chamber."

Slowly, the alien rose to his feet. Kelly half expected him to speak up in protest, or to otherwise plead for the human's life. But he remained silent. For a moment he regarded Kelly through the transparent game boards, as Kelly held his breath. Then, still without a word, the alien crossed his wrists in salute and vanished behind the sliding door. "You will return to your rest chamber now," Slaich ordered.

Letting out his breath in a long sigh, Kelly stood up and disassembled the playing board, storing the pieces and plates away in their proper places. So it had indeed come down to a toss of a coin, he thought, suddenly very tired. The coin was in the air, and there was nothing to do now but wait . . . and hope that Achranae had understood.

* * *

To: *Office of Director Rodau 248700, A.R.B., Clars*
From: *Office of Director Eftis 379214, Games Studies, Var-4*
Date: *21 Lysmo 3829*

XXXXX URGENT XXXXX

Dear Rodau,

It is even worse than we expected, and I hereby make formal recommendation that the Humans be completely obliterated. The enclosed records should be studied carefully, particularly those concerning the third game that was played. By using his tactical skills to create a game he and his opponent could jointly win, the Human clearly demonstrated both the ability to cooperate with others and also the rare trait of mercy. Although these characteristics gained him nothing in this particular in-

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stance—and, in fact, can be argued to have been liabilities—we cannot assume this will always be the case. The danger that their cooperative nature will lead the Humans into a successful alliance instead of betraying them to their destruction cannot be ignored. If the Chanis had been capable of building alliances they might well have never been stopped.

It is anticipated that a full psychophysiological dissection of our Human subject will be necessary to facilitate the assault fleet's strategy. We request that the proper experts and equipment be sent as soon as they become available. Please do not delay overlong; I cannot guarantee our Human can be kept alive more than a year at the most.

Eftis

* * *

Kelly's first indication that the long wait had ended was a faint grinding sound transmitted through the metal walls of his rest chamber. It startled him from a deep sleep—but he hardly even had time to wonder about it before the room's door suddenly flashed white and collapsed outward. Instantly, there was a minor hurricane in the room, and Kelly's ears popped as the air pressure dropped drastically. But even as he tumbled off the bed three figures in long-snouted spacesuits fought their way in through the gale, and before he knew it he'd been stuffed into a giant ribbed balloon with a hissing tank at the bottom. "Kelly McClain?" a tinny, static-distorted voice came from a box by the air tank as the balloon inflated. "Are you safe?"

Kelly's ears popped again as his three rescuers tipped him onto his back and carried him carefully toward the ruined door. "I'm fine," he said toward the box. "Is that you, Achranae?"

It was almost fifteen seconds before the voice spoke again; clearly, the Olyt's translator wasn't as good as the Stryfkar's. "Yes. I am pleased you are still alive."

Kelly's grin was wide enough to hurt, and was probably even visible through his beard. "Me too. *Damn*, but I'm glad you got my message. I wasn't at all sure you'd caught it."

They were out in the Transphere chamber before the response came, and Kelly had a chance to look around. In the ceiling, stretching upwards through at least two stories' worth of rock, was a jagged hole. Moving purposefully through the chamber itself were a dozen more Olyts in the white, armor-like suits. "It was ingenious. I feared that I would not be allowed to leave, though, once I had seen the board."

"Me too—but it looks like we had nothing to worry about." Kelly grinned again—it was so *good* to talk to a friend again! "I'll lay you any odds that the Stryfkar haven't *yet* noticed what I did. It's the old can't-see-the-forest-for-the-trees problem; they'd seen that four-tiered board used for so many different games that it never occurred to them that you and I would automatically associate it with Skymarch, the only game we'd ever played on it. So while they took my kingdoms-and-dragon setup at face value, you were able to see the markers as a group of objects in space. I gambled that you'd realize they represented our home worlds and this one, and that you'd take note of the relative distances

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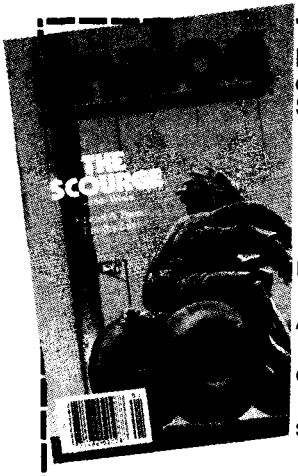
I'd laid out. I guess the gamble paid off."

Kelly was beneath the ceiling hole now, and a pair of dangling cables were being attached to his balloon's upper handholds. "We shall hope that winning such risks is characteristic of your race," Achranae said. "We have destroyed the Stryfkar base and have captured records that show a large force will soon be coming here. We have opened communication with your race, but they have not yet agreed to a tactical alliance. Perhaps your testimony will help persuade them. It is hoped that you, at least, will agree to aid us in our tactical planning."

The ropes pulled taut and Kelly began moving upward. "I'm almost certain we can find some extra help on Earth," Kelly told the Olyt grimly. "And as for me, it'll be a pleasure. The Stryfkar have a lot to learn about us pawns." ■



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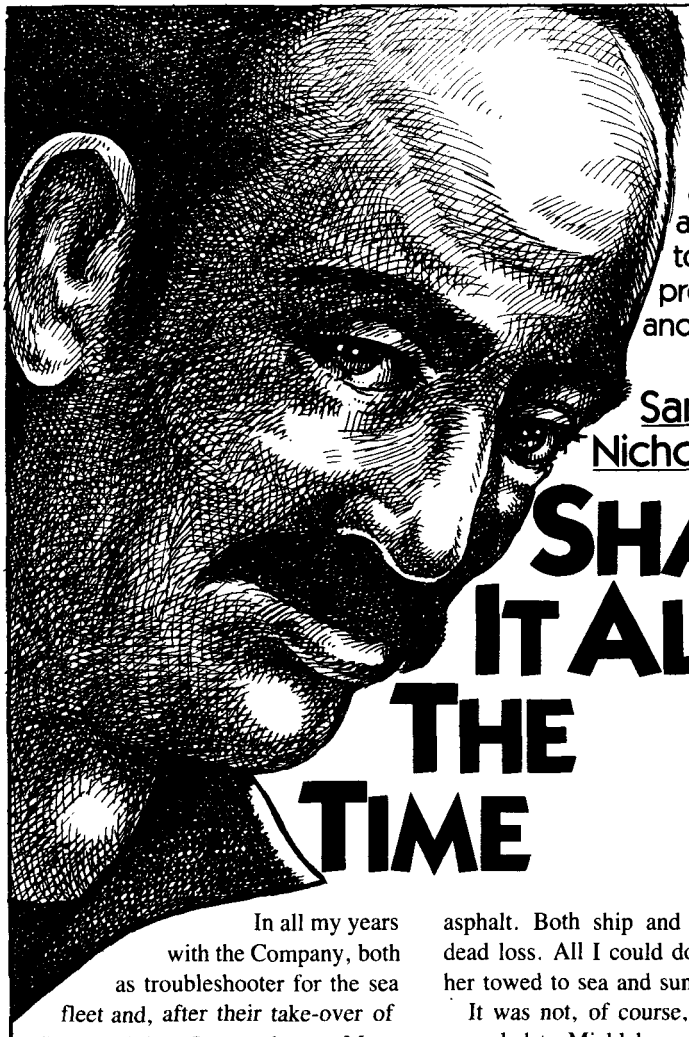

Different people have different approaches to problems—and the

Sam Nicholson

SHAKE IT ALL THE TIME

In all my years with the Company, both as troubleshooter for the sea fleet and, after their take-over of Space Mining, Inc., as boss at Moon Residence, I have never met a work-oriented problem we could not solve.

Maybe I had better rephrase. I remember an occasion where the heating system malfunctioned aboard one of our heavy-crude tankships. She came into port with the crude chilled to rock-hard asphalt. Both ship and cargo were a dead loss. All I could do was to order her towed to sea and sunk.

It was not, of course, an order that appealed to Mickleberry in New York Operations. He gave me a thin aloof look across his desk and said in his precise voice, "I cannot agree, Captain Schuster, that you *solved* the problem, but I admit you disposed of it."

So I will amend the above statement and say that, until we faced the nerve

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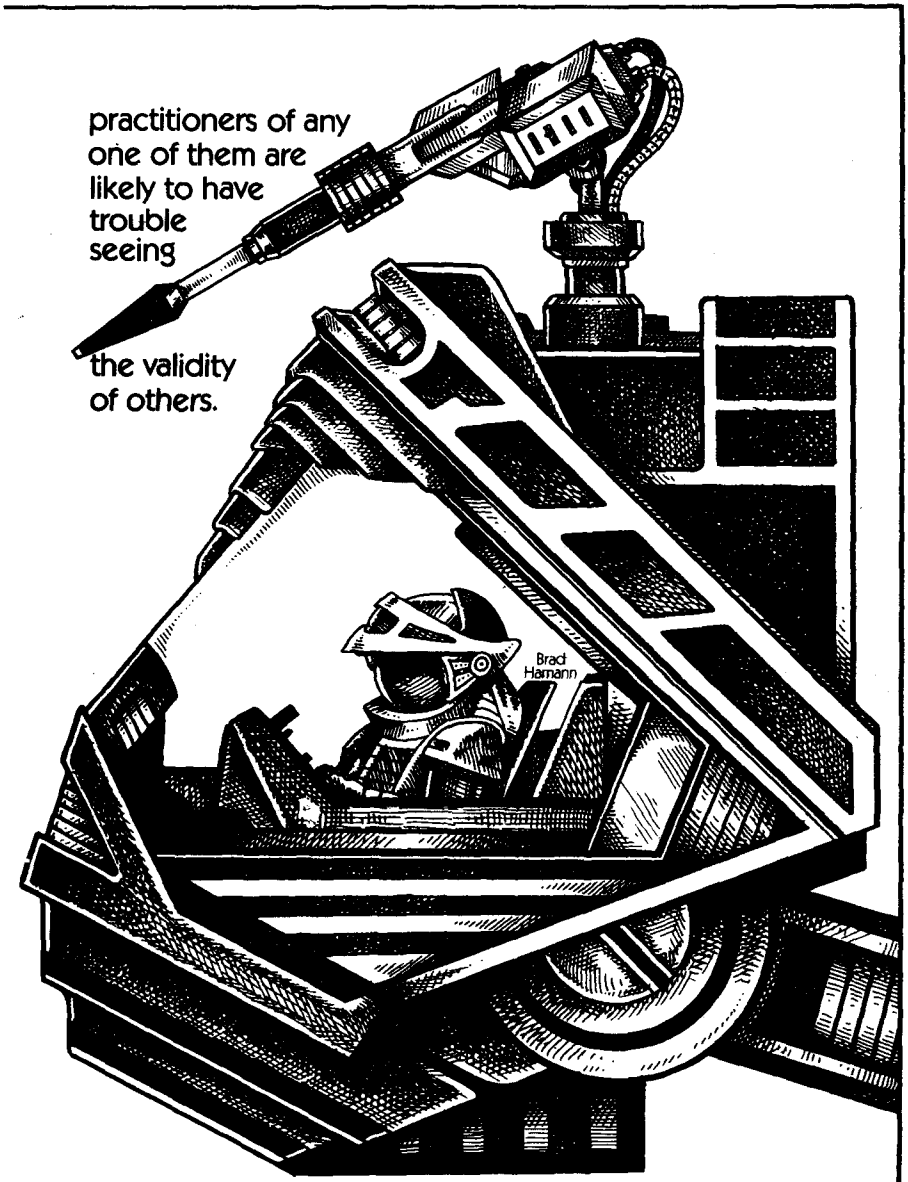

scare at Moon Residence, we had been disposing of our problems to the satisfaction of all concerned.

Every day brought a new batch of trials because we were pioneers in space techniques, expanding rapidly in all departments. After our robots hit pay dirt in the Asteroids, our smelting and refining complex extended over a vast Moonscape. We found there were advantages to tunneling great chambers into crater walls, thus insulating the new

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units from the alternate stresses of intense photon-bombardment during the day phase and metal-cracking cold during the night. The risks of meteor damage were also reduced, and there was the psychological satisfaction of having several billion dollars worth of sophisticated computers safely under cover.

It may be theoretically possible for robot systems to operate indefinitely in open space, but the guy paying for them sleeps better at night if he feels he has a safety margin.

Immediately, of course, we ran up against the seismic shock problem. When we started to blast out crater caves, we found that what we considered a moderate charge set the entire sector quivering like a leaf. The spaceport hotel adjacent to our Residence complained of temblor-shattered dishes and mirrors, and questions were raised in the United Nations Space Committee.

During the weeks it took for the seismic needles to settle down to their normal jitters, we changed our entire approach. Space Mining engineers designed mobile laser cutters that could hew out chambers block by block. But even if we reduced externally caused vibration to zero, there was still the constant jiggling of the Moon itself, insignificant as long as we remained on the surface but a potential disruption to finely adjusted electronic devices totally encapsuled within it.

We borrowed techniques from construction experts in quake-prone Earth areas and lined the chambers with multi-flexi-rod frames. Smaller, sensitive units were within springs or gimbals. We worked out a cushioning scale, from zero for the ore dumps to four for the cratered, chambered, framed, and gimballed procedural robots.

Expanded plants meant increased personnel, so we were completing a new Residence to replace our old canister-built structure. It was underground, two-level, and had been dubbed Res. 2.

While all this was going on, I had a further problem. Medical regulations would not let me stay permanently on the Moon. At intervals (whenever the docs caught up with me) I had to pack my suitcase and shuttle to Earth, and Moon decisions tended to be put on hold until I got back.

Right from the start I had been concerned about finding a new Moon boss. A troubleshooter is of no use if he is tied to one specific project. I knew that an Asteroid base with my name on it was in the pipeline, and I wanted to be free of Moon responsibilities. Finding a new boss seemed impossible.

"We realize we can't replace you, Captain Schuster," said Mickleberry.

"Yeah," I deadpanned. "When they made me, they broke the mold."

"Better late than never," commented Mickleberry. I haw-hawed, and he glinted briefly. Then he went on, "What I meant was that your administrative experience has been accompanied by a solid accretion of technical knowledge relevant to our operations. We can hire an administrator, or a metals expert. We can't find the same peculiar qualities in one person."

I let the "peculiar" go by and said, "You'd have a capable man in our construction boss, George Munn. He's no metallurgist but he's a civil engineer with some damned important bridges to

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his credit. He'd know where to look for trouble, in both hardware and personnel."

"Have you sounded out Mr. Munn?"

"Sounded, begged, and bullied. He don't want the grief of the top job. Says he's satisfied with the *status quo*."

Mickleberry got his alert-old-fox expression and inscribed a neat note on his desk pad. I figured he intended to go after George Munn.

However, toward the end of my next Moon shift, he sent out one of the bright young men from Space Mining's Assembly/Launch complex at Cape Canaveral. His name was Philip Wentworth. He was good-looking in the healthy, well-cared-for way of the current crop of young adults. Somebody had made sure he got his orange juice and booster shots, and had taken him to an expensive orthodontist. He had the bland contented face of a guy who's always sailed with fair winds and favorable currents.

I soon saw he was not the answer. He was an analyzer, a classifier. When he got through defining a situation, it was no longer our situation but a textbook example.

One day as I was working in my cubbyhole off the messroom, the red button lit up on my phone console. It meant a suit transmitter. I grabbed the phone, pressed the button, and growled, "Schuster."

"Captain—Munn, here." Munn had, I knew, gone out with the crater gang. "We've got a work stoppage."

His voice rang off-key. I repeated, "Work stoppage?"

"You know—strike—down tools —everybody out."

I guessed he was plenty hot under the collar. I said, "What happened?"

"We've been cutting the inner end of chamber N3. The seismic readings showed anomalies, so I called a halt. Wentworth says go on. I won't risk the gang in an unframed chamber. There we are."

"Wentworth, switch in," I said, thinking he was standing beside Munn.

To my surprise, Munn said, "Wentworth's not here. He's running the seismic readings and core analysis through the Residence computer. He says it's a classic case of a double splash, but I don't like the seismic pattern."

"Okay—I'll talk to Wentworth and be right out."

I slammed down the phone and Moonstrode to the third canister along the alleyway. Wentworth had taken over the desk in the section with the computer link-ups.

He was looking at a diagram on the computer tube. He turned to me, confident he had our explanation. "While the *mare* was still plastic," he said, "a large meteor struck it, throwing up a splash rim. This, in turn, was buried by the splash that formed the present rim."

"Let's see the seismic tape," I suggested.

He programmed the tape. I saw the knothole-effect Munn had noticed. I said, "The inclusion isn't homogenous. It's not solid."

"The core samples are solid."

"How many samples? One or two, or does the wall look like a pegboard?"

He hesitated, as if he had not ex-

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pected to be questioned. "Munn took the samples. I don't know what the wall looks like."

"Haven't you been out there?"

"But there's nothing to see, captain. The computer—"

I left him, rebounded my course down the alleyway, suited up, and went out the airlock. I commandeered a Moon crawler and lurched out to N3.

The chamber was one of our biggest and would hold the main nickel plant. A journalist had compared it to a cathedral, but it reminded me more of a gigantic hollow tooth.

While the lasering was suspended, Munn's crew had been clearing away previously cut wedges, arcs and blocks. The inner wall was pockmarked with random core holes. Munn saw me eyeing them and said,

"We can't seem to hit the suspicious inclusion. Of course, we drill only a couple meters beyond the next day's cutting, and the anomaly causing the seismic pattern may be even further into the wall, or it may not be at the height we've assumed. We don't even know how significant it is in the total wall structure."

"There's only one way to find out. Move the gang away from the chamber and set the cutter to remote control."

Munn glanced at the laser unit, which could travel vertically on an extension ladder, or horizontally on its broad, wheeled base. "You might lose the cutter, captain."

"Mickleberry can sue me," I growled.

"He would, too," murmured a mike that thought it was shut down.

We programmed the cutter to slice a grid, left the chamber, and pushed the remote control button.

For maybe thirty seconds nothing happened. Then the chamber collapsed, gradually, without sound. It was like watching the slow-motion re-run of an old silent movie.

When we bulldozed through to the fault, we found honeycomb-like fragments and the larger remains of what had been an empty shell.

"Impossible!" insisted Wentworth later. "A bubble implies air, and the Moon has never had an atmosphere."

"If a berg-sized ice meteor plunged into the still-soft *mare*, there might be trapped gases," I pointed out. "In fact, there *were* trapped gases. The core samplings missed the pocket, but the seismic lines indicated something was wrong.

"We don't allow careless mistakes, Wentworth," I went on. "Forget the textbooks. They're what we're rewriting out here. If Munn tells you he's found an anomaly, go out and investigate."

His face flushed, then paled with rage and insult. If looks could have killed, I would have had it, then and there.

I had forgotten the generation gap. I had grown up in hard times, under hard discipline. Wentworth had been raised by permissive parents in easy circumstances. Nobody had ever said *No* to him or criticized him bluntly. Naturally bright and ambitious, he had taken to school studies like a duck to water. Space Mining had recruited him at the university, had financed his graduate work, and was now grooming him, nursing him along, for an important executive post.

Fair winds, favorable currents—until

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his classic examples had failed him and he had made a mistake and been called on it. For him, a new and unpleasant experience. Would he learn from it?

He was entitled to a chance. I told him to decide on a site to replace N3. In fact, I left Residence business entirely in his hands. A convoy of robot tugs was homing in from the Asteroids with ore barges. I wanted to blast out and meet them as they changed to an orbiting course. We took every precaution —including the ultimate possibility of dispersing a cargo—to make sure that a hundred-thousand-ton barge of heavy metals did not fall upon the Moon with an embarrassing thud.

It took two weeks to soft-land the ore. When I got back to the office, I saw that Wentworth had completed the site report. Before I had time to look it over, Munn tapped at the opened door and drifted in.

I gave him a genial nod. He was large-framed, spare-fleshed, gray-haired, with a face grooved by desert heat and arctic frost.

"Seen Wentworth's report, captain?" he asked.

"Not yet." I noted a troubled expression in his eyes, and waved him to the other chair. "Something wrong with the site?"

"I hope not. I chose it," he said, sinking down as bidden.

"How come?"

"Well, Wentworth ran the survey tapes through the computer, and the recent seismic readings. Then he crawlered around the sector three, four times. I wondered at the delay. I finally buttonholed him. He spouted a lot of computer-speak, then asked for my opinion."

Munn paused. "I thought he meant *opinion*, captain, like when you ask me 'Whattya think?' and I give the construction angle, and you put it in the hopper with the other factors and come up with a decision. I told Wentworth we had already chambered the opposite wall of the small K crater, with good results.

"He bought it. Just like that," said Munn. "He wrote the report, and when I snooped a gander at it, I saw I hadn't given an opinion, I had made a decision—without the hopper of other factors, like, for instance, whether K ought to be kept for another iron smelter.

"You know me, captain," he said earnestly, "I'm not out to knife Wentworth. But we're talking about a megabuck complex. I don't want the responsibility of siting it wrong. The damned plant would be charted as Munn's Mistake, which ain't as good PR as Tycho's Peak, by a long shot."

I had to laugh. "Don't worry. I'll check the report. Maybe Wentworth had already decided on K."

"I don't think so. I don't think he can see reality, captain. He has to have everything plotted on a computer tube, so he can draw graph lines and pinpoint and color-heighten. If he had stayed in the Residence and taken the computer's word, he would have been okay. But he crawlered out and *looked*—and couldn't match up the data. The longer he looked, the more confused he got. He's like a doctor that only studies X-Rays and blood vessels and nerve patterns. When a real patient walks into his office with a hangover, he's never seen

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anything like it before, and he doesn't know what the hell to do."

I laughed again, but if Wentworth's needle was stuck, the situation was not funny. Moreover, I could not stay on the Moon and coach. Once more I had overstayed my time allotment.

Fortunately, Munn still had some weeks left. I approved the K site and told him to start cutting. As for Wentworth, he could begin moving us into Res. 2.

I called him into my office and said, "While I'm gone, you'll be working with assay reports, production figures, shipment figures—stuff you've already handled at Space Mining. Phasing us into Res. 2 will take time, but the work will go faster if—"

"If the messroom and living quarters are moved first," he said quickly. "The men will work more willingly at dismantling and transferring the labs and offices if they have their new quarters at once."

I had been about to say exactly the opposite—that the men should get into their new quarters only after the other departments were in place.

Again, the generation gap. I believed the reward should come *after* the work, that anticipating it speeded the work. Wentworth had been given the reward first, to bribe and encourage and provide the spoonful of sugar.

Well, let him try it. I did not care, as long as Res. 2 was fully operational when I next came to the Moon.

I shuttled to Earth and spent three days at the ALC's Transient Quarters, regaining my Earth legs. Then I went into a huddle with the guys working on the Asteroid project. The rest of that week went by, and most of the next.

Then one evening I got a phone call from Doc Grant, Space Mining's Medical Director.

"Four of your Moonmen are homebound under sedation, captain," he said. "A neural disorder. Extreme nervousness, aggressive behavior, hysteria, crying jags. Wentworth says all air and water test out chemically clean. Have you dug up a Moon virus?"

"The Moon is a burnt-out cinder, doc," I said. "Our viruses come from Earth. Space tourism is big business now, you know, and all of it flows through Moonport, viruses included."

"And I daresay your employees are often over there."

" 'Often' is kinda strong, at the prices the Moon joints charge, but there's certainly contact. Anybody over there with the same complaint?"

"No. We've notified them, of course. Further details will have to wait until we can run lab tests." He hesitated, then added, "Mickleberry is worried about a production slump. He wants you to return to the Moon. I can't authorize an extended visit, but—"

Four evenings later I was on the Moon, bounding through the spaceport lounge, suitcase in hand. I nearly headed for the flexi-tube to our old Residence, then remembered to follow the new ramp down one level to our tunnel.

The deck was black-tiled, so as not to show Moon grime. The bulkheads had bright, abstract mosaics. Classy. I slipped my Company security card into the slot at the entry lock. After a long moment the steel panel slid aside, and I entered our new bailiwick.

Everything was bigger and better, of

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course, to the degree that a Hilton is better than a tin-roofed shanty. The wide, vinyl-tiled main corridor was lined with labs and offices, most of them still in the transferral process.

I was surprised and uneasy. Even if half the staff was stacked like cordwood in the Res. 2 clinic, there had been plenty of time to complete the move.

And the virus apparently had not reached epidemic proportions. At the end of a transverse corridor I saw the new gym, where a looping-gaited handball game was in progress. From a rec room in the middle distance came the plick-click of table tennis balls.

I Moon-strolled onward and came to a hand-railed ramp curving to the living quarters in the lower level. The insistent thump of what the pop fans were calling Doom-Bomb rock blared from the stereo in a dayroom down there. I thought, *all the discomforts of home.*

Beyond the ramp, on the main corridor, was my new office. I went past it and continued to the messroom, since I had to ask the night messman where I was supposed to bunk.

The architects had really gone to town with the messroom. Sculptured vinyl deck. Wall panels. Fancy lighting. As usual, a section of the serving counter held the day's left-overs, plus assorted pastry. Residence food was the best.

The messman was kibitzing a bridge game being played at the end of one of the long tables. Suddenly a player jumped up—"up" being quite a leap in Moon gravity—and yelled, to his partner, "Why did you waste that trump? Didn't you see he was trying to finesse through the dummy?"

"If you had his king, why did you give me a bust bid?" yelled his partner.

In another second they would have been at each other's throats, but the messman had sighted me. At his gesture the pair stopped, glanced around, and slowly sank down.

The messman glided over to me, took the suitcase I had been hanging onto, preceded me along the corridor and down the ramp. The stereo blare became louder as we descended. No way would I put up with that racket. I barked, "Go tell those fatheads to tone down their woofer before I put my foot through it."

He laid my suitcase gently in front of a cubicle door, and glided to the dayroom. The racket ceased, and he glided back. I asked him, "Is Wentworth around?"

"He's in the old Residence, captain, sorting and packing."

So much for modern work psychology. The guys were enjoying all the amenities while the boss did the work.

The messman continued, "Do you want him?"

"No—I'll see him in the morning."

I hit the sack and slept soundly. In the morning I shaved, mist-showered, threw on some clothes, and ambled up to the messroom. Breakfast was under way. I spotted Wentworth and began to drift over to him.

A tray slammed down, with the clatter of plates. A wound-up voice said, "But I gave you a forcing bid. One honor trick was enough—"

I turned around and saw that the bridge pair was at it again. Nobody paid much attention. The whole bunch looked as if they had got up on the wrong side of the bed. They were haggard, apathetic.

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I thought back to the long, stormy voyages of the old rust-buckets, weeks at sea, water tanks running low, everybody pounded by the pitch-and-roll and the ceaseless shuddering pulse of the engine. Numb fatigue. Cabin fever. It all was here. Why?

The bridge players started swinging fists at each other, toppling off their feet in the light gravity. I plowed between them with a force that sprayed them in opposite directions. All actions stopped, and I took the floor.

"What's the matter with you guys?" I demanded. "Can't you stand prosperity? We had a better time up here when we were working fourteen hours a day, eating emergency rations, and sleeping on planks. Maybe all of you have a touch of flu—you're a damned sick-looking bunch—but that's no excuse for taking it out on shipmates. If you're really sick, we'll shuttle you home. Otherwise, remember the next guy feels just as lousy as you do."

There was a pokerfaced silence. Then a husky young chap fell forward into his bacon and eggs and began bawling.

The clinic staff left their breakfasts and converged on him. I resumed drifting to Wentworth. He looked at me with sullen dislike and said, "Scoutmaster lecturing won't help. Everyone is physically ill."

"Everyone?" I thought a moment. "Is Munn laid up?"

"No. He moved out to the emergency shelter at the Assay unit. It's near K crater, and he's working overtime plotting the laser work."

I would have liked to beat it out there, but I had been sent to nail down a virus. After breakfast I strolled to the clinic and heard what the docs had to say. Certain cases responded to a couple days of clinic rest, then relapsed. Others went completely off the deep end and had to be put aboard the next Earth shuttle.

Faced with a blank wall, I returned to my office in the old Residence. I might as well move my junk myself, I figured, since nobody else was going to. The old canisters seemed lonely, with the messroom shut down and the business and technical units half torn apart.

During the next few days the nerve cases eased off significantly, and I was able to get the transferring completed. In fact, the mood seemed so much better that I thought about returning to Earth. Naturally, the medical staff would not admit the crisis was over. They called it a temporary remission and waited like vultures for an upturn in business.

I got impatient. I packed toothbrush, razor, a few duds still warm from the laundry automat, and rode out to Assay with the messman who was bringing fresh stores to Munn.

Here I could at least be useful. I worked a week as site boss while Munn kept ahead of the cutting with his seismic readings and core sampling. I could see the great chamber taking shape and felt pretty good.

Then the "virus" struck again. The first work shift came out and reported two guys had half-killed each other—I wondered if they were the bridge players—and another was shaking with the DTs. After the middle shift I rode back to the new Residence with two assayists. It occurred to me that I had not interviewed any of the sick men. Maybe I

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should have been gathering my own data.

With this in mind I questioned the assayists. They said they had tended to feel "logy" and "oppressed," even "nauseous," with lack of concentration. However, after they had crawlered out to Assay and begun work, the illness seemed to lift. They had felt better the previous week, but attributed it to the fact that they were still working overtime on the Asteroid haul and were at Res. 2 only to eat and sleep.

They definitely did not like bunking at Res. 2, and asked me if a construction material could be poisoning them. Asbestos, maybe?

I assured them we had not used asbestos. We were at a mutual loss. The only solid fact seemed to be that the illness had begun while I was away, that it had eased off as soon as I had come back, and that it had resumed as soon as I had moved out to Assay.

When we got to Res. 2 it was suppertime, but after I had desuited I went looking for Wentworth. I found him in the new computer room. He was seated at a tube console, his illness reflected in the slump of his shoulders. He glanced at me and set down the thin plastic glass of soft drink he was holding.

Again, the generation gap. I solved problems with black coffee. Wentworth was the Pepsi generation.

I said determinedly, "It's not a virus. It can't be a virus. What kind of virus would hit you guys as soon as I leave, ebb away when I come back, and flare up again when I go out to Assay? We've gotta—"

The thin plastic glass had been giving little shimmies as I spoke. It now stuttered off the console edge and spilled.

I stared, surprised. I had not realized my loud mouth had been making such strong seismic waves. Of course, sound could break wine glasses but that was a high-pitched note. My low growl could not possibly—

Sound waves . . . growl . . . woof. I remembered the blare of the Doom-bomb rock, and my angry . . . *tone down their woofer*. . . .The new stereo had come into use after I had departed for Earth. It had ceased while I was in Res. 2. It had resumed as soon as I had moved out to Assay. The *stereo!*

Wentworth read my thoughts on my face. He said bitterly, "I spent hours working the answer out on the computer. You set a glass to vibrating, and guess everything."

"How did you work it out?" I asked. When he hesitated, I continued, "I'm genuinely interested."

Unwillingly he answered, "I programmed to find all factors present during both phases. I was thinking of allergies—food, equipment, soaps. But all the factors in the physical environment were the same. So then I programmed for the work sheets. Who had been present—or absent? Nobody but Schuster had been both.

"Next, I had to find out why your presence would inhibit the attacks. I was damned sure it wasn't your pollyanna pep talks. How had you changed the environment? Because the environment is totally artificial, any change ought to be discernible in the energy levels. The computer found a small drop in power delivered to the dayroom in section one. Something was turned off when you

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were present. I remembered the rock fans saying you might throw out the stereo if they didn't humor you.

"I thought of published reports," he went on, "about how the more violent versions of rock deafen people and kill house plants. Under Moon conditions, would it lead to nervous breakdowns?

"So I next programmed for seismic readings. Except for the life-support systems, this structure is only frame-cushioned." He pressed a console button. "Here's normal seismic activity against one outer dayroom wall. Bear in mind that the dayroom is at a corner."

The tube activated, and the picture was divided in two by what I realized was a double line of insulation and paneling. Inside the dayroom was a minimal flimmer that disappeared into the double line as if into blotting paper. Outside, the jittery Moon waves hit the insulation and formed backlash patterns.

"Here's the reaction to the blast-off of an orbit cruiser," said Wentworth.

The orbit cruisers were hundred-passenger shuttles that never landed on Earth. They took aboard passengers and provisions in orbit, as the old ocean liners used to stay outside a harbor and load from launches and lighters. The lesser Moon gravity enabled the cruisers to land and blast off from Moon spaceport with reasonable fuel expenditure.

I watched the tube. Suddenly the irregular, low-level Moon jitters became a series of tidal waves smashing against the insulation and sending blunted patterns through the wall. We were, of course, right on the edge of the spaceport.

"Next, the stereo effect."

The tube returned to the normal pattern. Abruptly, wild impulses spurted across the inner area. They broadened through the wall, hit the Moon activity and were pressed back. The shuttle blast-off had met no resistance within the structure. The stereo waves pulsed into the Moon waves, and pulsed back, building up an ever-broadening band of ever-increasing chaos.

"The second outer wall complicates the pattern, feeding in from another angle," said Wentworth.

The longer the stereo had played, the further the invisible band had spread through Res. 2. An evening's listening had been a brain-scrambling experience. The nearer the guys had bunked to the dayroom, the worse they had been hit.

Wentworth switched off the tube.

I said, "Good work."

"To what use? You had the answer—a lucky hunch."

Hunches come through working with people. Wentworth's generation worked with robots.

He continued, reckless in his nervous disorder. "It's the end, the limit. You're really Mr. Know-it-all—"

If I had not had the knack of finding answers, Mickleberry would have fired me years ago.

"—you and your stupid fourteen-hour days—"

Work was something I had fought for, sweated over, enjoyed. In my day, work was a man's pride. Now it was a dirty word. The In thing was leisure.

"—asinine pep talks and moral superiority—"

Was moral inferiority any better?

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Was I supposed to whiz from the shuttle to the nearest whorehouse? Or to read "adult" books instead of the technical publications that interested me?

"—a recluse like yourself can't understand—"

Recluse? It's lonely at the top, of course, but I always thought I was the gregarious type away from the command post. Wentworth had never encountered me away from the command post.

"—surly, bad-tempered—"

Loudmouthed, yes. But nobody could accuse me of kicking a man when he was down. I barked a lot, I never let go when I had my teeth in a bone, but I had a bulldog's loyalty and stubborn patience, too.

"—so now you can fire me," concluded Wentworth obstinately.

"Fire you?" I repeated. "If Mickleberry and I fired everybody who hated our guts, we'd be running the outfit by ourselves. You're a sick man. We won't discuss your future now. Don't throw away a top job because of personal frictions."

"Sick or well, I can't work with you. I can't stand your life-style."

He could not forgive the reprimand. He could not accept that we would not tolerate mistakes. He did his own thing. He did it his way. He had never known Right or Wrong, only shades of Viable. His compass needle swung from expediency to expediency. He had a terrible gut-hatred of True North.

I left him to himself, and we did not have much to say to each other thereafter. His computer analysis of the stereo factor was a masterpiece. I would have kept him working for us if he would have stayed. But he preferred to be popular with his peer group. He did not have the self-discipline to take correction or advice.

When Munn came back from Assay, he stopped at my office. He had not seen the new layout, and he kidded me about my rise in status. I grinned, got up from my chair and motioned him into it. "Sit

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down," I urged. "I wanta try something out."

"What now?" he smiled, mystified, sitting at my desk.

I sat in the opposite chair. His grooved face and shrewd eyes had what it took. "Yep," I said. "You're in the right spot, George. Moon boss."

He started up as if the chair were wired. "No! Bob, I don't have the technical—the administrative—"

"You've got engineering experience, common sense, and you're people-oriented. No know-it-all computer will take over the ship as long as you're on the bridge."

"But Mickleberry must have a dozen men—younger men—"

"Yeah, sure. He sent the best young man he had. You want Wentworth running the outfit?"

"God, no. He can't change his shirt without asking a computer."

"George, I want that Asteroid base. I can't go out there until Moon operations are secure."

He took a deep breath. "Well, okay—"

"Great!" I bounced up. "We'll have a drink on it."

"Drink? Hard liquor isn't allowed in space."

I drew a bottle of Scotch from the bottom of a file drawer, dusted it off and set it on the desk. I said, "Wentworth was full of his generation's values, but I kinda like a rule of our generation that says, 'Rank has its privileges.' "

Later, after Munn had left, I activated the closed-circuit video and programmed for Mickleberry's office. When his parched face was registering intelligent interest at me, I said,

"I've been slow on the uptake lately, Mickleberry. I thought you sent Wentworth to be Moon boss, but you sent him as pressure I could use on Munn."

"And you used it?"

"You bet. Munn is our man."

"Excellent, captain. The Asteroid project is now clear."

"If you say so. But who are we knocking ourselves out for? I mean, let's face it. The permissive society has no goals except to be permissive."

"Captain Schuster, we shall yet see a generation follow us to the stars."

"I dunno. A generation is a long time."

"One fortunate effect of Relativity is that the longer one lives, the shorter the decades become."

Well, if he wanted to think of it as fortunate, of course. ■

● No doubt equality of goods is just; but, being unable to cause might to obey justice, men have made it just to obey might. Unable to strengthen justice, they have justified might; so that the just and the strong should unite, and there would be peace, which is the sovereign good.

Pascal

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The Alternate View

THE DEFENSE OF THE REALM

Jerry Pournelle

Two weeks ago we held a meeting of the Citizen's Advisory Council on National Space Policy. Some fifty scientists, engineers, astronauts, science fiction writers, aerospace industry executives, and government representatives gathered for four days to look at space policies and make recommendations to Congress and the White House. Word of the Council's activities had spread, and this meeting was much larger than the first one.

It was also less hopeful. When we met a year ago we had some hope that the space program could be expanded. This time we knew better. With interest rates at 20% and the projected deficit much higher than expected, all programs will have to endure another round of cuts; and space will not be spared.

But the space program must be saved. We can endure some temporary setbacks, some slicing of program items; but the exploitation of space is vital to our nation's future. There seems to be some realization of this in the White House. NASA's cuts are lower than those most independent agencies received. They're still severe.

The U.S. can let some parts of the space program slip. We can wait for private investment to exploit the commercial resources of space. There are those on the Council who think this is the best way to go; that NASA and the government cannot and should not continue to dominate the space environment, and the sooner they get out of the way, the sooner we will have a *real* space program.

There's a lot to be said for that view, and indeed one major part of the Council report examines possibilities for "privatizing" large areas of space technology. But: there is a time element here. Private exploitation of space may be desirable, but before that can happen there must be *access* to space; and as Stephen Goldin remarked during a general session of the Council, if the Soviets are Number One in space, will there be a Number Two?

The first Council report dealt largely with space resources, and presented a plan for developing them. The second endorses that report, expands on it, and looks at both the civil and military space programs. *Commercial:* Both reports are available for $10.00 postpaid from the L-5 Society, 1060 E. Elm St., Tucson AZ 85719. (L-5 memberships are $20/year, same address.) And having said that, let me repeat another announcement: The first public convention on space colonization/industrialization will be held in Los Angeles over the weekend of April 2-4, 1982, at the Airport Hyatt Hotel. Guests

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of honor will be Robert A. Heinlein, author, and Fred Haise, Apollo 13 astronaut. Keynote speakers will include Dr. Hans Mark, Deputy Administrator of NASA.

Convention memberships are $75 for professional memberships, which include banquet ticket, ticket to reception for the guests of honor, and some publications; and $30 for regular memberships. Memberships can be obtained from L-5 headquarters above, but it's quicker to write L-5 Convention, Box 92056, Los Angeles CA 90009, since the Convention officials including the treasurer are in L.A., not Tucson.

I begin with the assumption that space is vital to U.S. national security. This is not so much an assumption as a conclusion developed over many years.

Moreover, national security means a great deal more than *military* security. A healthy economy is also important.

Not long ago, the U.S. had a positive balance of payments: we exported more than we imported. If we look back at those years, we find that our two most important exports were high technology and agricultural products, in that order. But then came lean years. Investment in new technology dwindled. As we retreated from space and dispersed the splendid team that gave us Apollo and Skylab, we lost the cutting edge of our technological development instruments.

As we retreated from space we also lost productivity; and our balance of payments went from positive to negative, even though we increased our agricultural exports. We had lost our lead in high technology. We faced a technology deficit.

Now true, I can't prove that the technology deficit comes from dismantling the space program. I can't prove that our falling productivity was entirely due to NASA's falling budget. I think there was a connection between the vigorous space program of the '60s and that decade's expanding economy. I'm certain we don't understand all the connections between technology and productivity. One theory of productivity—from Boretsky of the Department of Commerce—is that most of the postwar productivity gains were due to very rapidly expanding technology, and that era has ended. We can't do that again.

Or can we? One reason for our technology deficit was our war against technology during the whole of the '70s. For a decade our students were taught that technology was evil; that everything is crap and there's no help for it; that civilization as we know it is wasteful, and even with the most stringent conservation programs, even with the most drastic cutbacks in consumption and standard of living, things will never get better. The Limits To Growth said that we had already passed the most important limit. We have lived through the Golden Age.

And surely that has had an effect? Surely one reason that people have not all dug out their savings and rushed to invest is that they are convinced there is no hope, that they'd best save up for hard times, buy gold and silver and weapons and food. And just as surely, the one voice that spoke against the Limits philosophy came from space. The space program promoted a technological momentum that argued against limits. The space program promised limitless growth, limitless resources.

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Perhaps we wouldn't have them for a few decades, but they were there, and we were, slowly and lurchingly, going after them—

Then we cut back. And if the government, which is supposed to look to the future—if the government won't invest in the future, why the hell should anyone else?

A vigorous space program could change the whole spirit of the age. It could bring back hope. We could rediscover the idea of progress.

Then there's the less pleasant half of national security. Wealth and productivity alone won't protect us, and unless we take stringent measures, and soon, we may be denied access to the space environment. The Soviet Union speaks of peace, but even as they denounce the shuttle as a military vehicle, and call for demilitarization of space, they test antisatellite weapons; while back in the '60s, just before we signed the Test-ban Treaty, they tested a nuclear satellite killer. (They fired a train of boosters from Kapustin Yar and a nuclear-tipped interceptor from Sary Shagan; the warhead was timed in such a way as to expose to the weapon effects three reentry vehicles at different distances plus a Cosmos satellite passing overhead. Needless to say, the U.S. has never conducted any such tests.)

If we don't have a military space program, we may not be able to get into space when we decide that we want to.

An increasing number of critics, including some powerful members of Congress, question whether it makes sense merely to increase the military budget while keeping the present strategic doctrines and force structures. The Soviet Union pays private soldiers some $20U.S. per month. It's clear that the U.S. is at an economic disadvantage in trying to match the Soviets division for division, tank for tank—and our attempts to keep large forces overseas add greatly to our balance of payments problems.

Space R&D has been suggested as one alternative to increasing the military budget. It has one clear advantage: There might be some civilian technology fallouts, something useful to the civil economy, from space R&D; while buying more guns and tanks and pouring concrete racetracks and silos is unlikely to lead to prosperity.

Space may well be the decisive theater of war. They teach it in elementary tactics: "Take the high ground, boy, or they'll kick hell out of you in the valleys."

Example: kinetic energy weapons. I can conceive of space "lances," not much more than orbiting five-foot bars of iron with sensors in front and tiny vanes in back. They come out of orbit and are guided to targets—either self-guided, by having in memory an image of a tank seen from the top, or guided to home on a target illuminated by a laser beam from space. The system is certainly possible in principle, and most of the technology is known; and it would be a safer defense against tanks than neutron bombs.

Example: space observation stations to warn of enemy strategic attacks. No rational enemy will attack missiles if he knows they will be launched before his missiles can strike. On the other hand,

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no sane President will start Armageddon on the report of a radar screen.

Space systems can, at least in principle, make it credible and rational for the U.S. to adopt a policy of launching a retaliatory strike on reliable warning of attack; thus making the great MX "racetracks" needless, and thus saving over a hundred billion dollars.

Space systems can, at least in principle, provide an answer to the ICBM; an actual defense, rather than assist in a suicide pact. Space systems can, in principle, allow us to adopt a policy of assured survival rather than the doctrine of Mutual Assured Destruction, sometimes abbreviated as MAD.

But principles aren't a program, and saying that space is decisive isn't proving it, especially since there are a lot of generals and admirals who are certain they know how wars are fought, and what we need to fight them.

After all, space systems are expensive, and they are very, very vulnerable. If we put up something costing $10 billion that gives us, say, $50 billion worth of military advantage—why, won't the enemy knock it down? It won't cost him very much. He may well be able to do it anonymously.

We need guns and planes and missiles, and space holds out promises. What if the promises don't pay off? What if we invest in space capabilities and space weapons and they prove worthless? Or they'll work, but we just can't get them working in time. After all, it has taken decades to develop a new main battle tank, and we don't have very many because they cost far too much—and look at the shuttle.

If we trust high technology we end with nothing at all. It has happened time and again. We study and study but we buy nothing, and the armed forces are left with nothing. Stay with what we know. The tried ways are the best ways.

So run the counter arguments.

Not easy questions, but they are the most important that the Republic has ever faced. Our survival may depend on finding the right answers, and there are few forums for this important public discussion. We have the L-5 News, and this magazine. A few conventions. Not many other places, and the Congress remains ignorant of most of the arguments.

One answer is to compromise. Buy a little of this and a little of that, patch up holes in our strategic deterrent by adding some low-risk items; and meanwhile go hard for new technology, including space technology. Surely—surely we can do better than we have done.

This seems to be what the President has decided to do. It is an answer that pleases very few, nor can it, especially since we don't know much about the technology being developed. If we're doing nothing, if we've only compromised on numbers, saved money but shirked buying the R&D—

I doubt this President would do that. But I'd sure feel better if I were certain we were developing space capabilities. And those can be built without secrecy, acquired quite openly as we develop the shuttle. One way is to build a permanent manned presence in space. This buys us a maximum in information. It aids development of a commercial space capability while hanging onto military options. It preserves our access to the space environment.

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And that we have to do. The budget cuts have wrecked our hopes for an expanded science program. Without a financial miracle, the Halley's Comet mission is dead, and the Galileo Jupiter probe will be long delayed. I hope we keep the Large Space Telescope on schedule, but I'm fearful.

I hate losing the science programs. They are the cutting edge, the high incentive to a science career, the lodestones that pull us forward to progress. But—they need not be lost forever. If we retain access to space they are merely delayed. Most of us will see them revived. If we retain access to space. If we develop the capabilities we require.

If not—

I write this months in advance of publication; by the time you see this, Reagan's first State of the Union message will be history. I hope he will have had some good words for space.

In fact, I have a dream: that a President will stand before a joint session of Congress and renew the vows made by John F. Kennedy; that he will proclaim anew our intent to be a spacefaring nation.

And if not this year—and not this President—then we can still dream. There is still time. ■

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Donald Kingsbury
Part Three of Four Parts
COURTSHIP RITE
Human cultures differ greatly depending on their circumstances —and the first glimpse of one very different from your own can be a traumatic experience indeed!

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Seven times a day He passes overhead. In the religion of the Race it is **The God of the Sky** *who long ago carried sacred life to the profane planet Geta to save the Race from the Unknown Danger. God has since chosen silence so that the Race might learn from its own acts. All knowledge is subservient to biology. All leaders are biologist-priests. All religion stems from genetics, which alone is able to guide survival on a world deliberately chosen by God to be harsh enough to breed the kind of "kalothi" needed to master the Unknown Danger.*

Clans dominate the life of Geta. Non-territorial underclans breed themselves to perform defined services. Territorial priest clans control biology and rule, vying with each other to fulfill the Chant which predicts that one clan will unite all of Geta. In the region of the Wailing Mountains the Kaiel priests rule.

The maran-Kaiel family, which consists of the brother-husbands **Gaet, Hoemei,** *and* **Joesai,** *and their co-wives* **Noe** *and* **Teenae,** *are courting* **Kathein** *so that they may transform their marriage into a complete Six. Kathein is a physicist whose main effort has been directed to the extraction of information from a single crystal which has come to be known as the Frozen Voice of God.*

The clan leader of the Kaiel, Prime Predictor **Aesoe,** *disapproves of this match, coveting Kathein himself, and insists that the maran Five, who are subject to his will, marry instead the powerful but clanless heretic* **Oelita** *from the coast even though she is an atheist. The coast is ruled by the Stgal, and charismatic Oelita is their most powerful enemy. Political advantages would accrue to the Kaiel by making an alliance with those opposed to the Stgal. Oelita is called the Gentle Heretic because she does not believe in violence and abhors the system by which the priest clans call up the low in "kalothi" to be eaten during times of famine. She is unaware of Aesoe's plans for her.*

In defiance of Aesoe, the maran send Joesai from the city of Kaiel-hontokae down through the Valley of Ten Thousand Graves to the coast to challenge Oelita by the Seven Trials of the Death Rite, hoping to kill her so that they will not have to marry her. Teenae is sent with Joesai to balance his violence and secretly plans to carry out a less drastic plan of her own which will both give the maran Kathein and give the Kaiel strategic advantage on the coast. Teenae befriends Oelita and discovers that she, too, owns a Frozen Voice of God, though is unaware of its true nature.

Meanwhile the seagoing Mnankrei, eying the weak Stgal, covet the same coastline of the Njarae Sea as do the Kaiel. Their principle form of attack is a mutated profane beetle, the underjaw, which creates famine by eating the sacred wheat. Storm Master **Tonpa** *happens to be in the coastal port of Sorrow when Joesai tests Oelita while hiding behind false clues which cast all suspicion for his initial death trap upon the Mnankrei. Tonpa, furious, captures Teenae, tortures her, and exposes the Kaiel plans to Oelita for the deceit that they are—but only as a cover for his own deceit. He burns Sorrow's main granary to aggravate the coming famine so that the Stgal will be forced to buy*

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Mnankrei wheat and accept Mnankrei rule. Blame for the disaster is cleverly cast upon the Kaiel.

Teenae is wounded by an outraged resident of Sorrow and Joesai takes her away to safety, but returns to Sorrow to steal the Frozen Voice only to find Oelita imprisoned by the Stgal. While rescuing her he makes off with the Voice. She humiliates him by recovering it, and later with the aid of Gaet brings the crystal to Kaiel-hontokae in the hopes of exchanging it for the relief of her people. She is taken in by Gaet, Hoemei and Noe and, when Teenae and Joesai arrive home, finds to her horror that they are all one family.

Oelita makes an alliance with Aesoe. Hoemei becomes more and more aware of the nature of the coming Mnankrei attack through the rayvoice spies. The Kaiel begin to organize a Gathering to strike out and destroy the Mnankrei before the biological sins of this clan make them too strong to stop.

32

On the foothills of the Wailing Mountains above d'go-Vanieta Mi'Holoie spoke to the forepriests of the Gathering of Ache. "Is it enough to be sharp? A merciful man may be sharp. Will the point of a needle that penetrates flesh pass through steel? Flesh is mastered by Metal and Metal is mastered by Cruelty. Our Love of God's Flesh has smelted us, the journey here has purified our Metal, and the Tourney of Extreme Trial has hardened our hearts to Cruel Temper. At dawn we pierce the metal of this heresy to its Arant flesh. Cruelty is not deflected. The Arant shall willingly offer us Feast by sunset."

The Clei scribe Saneef
in "Memories of a Gathering"

Bendaein hosa-Kaiel was old enough to be wise yet young enough to be willing to partake in an arduous crusade. He had long been known as a man of action whose cautious strategy had extended Kaiel influence eastward around the Itraiel almost to the Sea of Tears. He was a scholar and a prime voice of the Expansionists. The full ten fingermen of his Hand Council argued with him in the den of his mansion, only Joesai remaining stoically silent.

Bendaein's face design was asymmetrical, built around knife wounds he had received during the gruesome subjugation of the lower Itraiel. The marred face, layered with experience, gave this Event Mover authority in the eyes of his fellows but to Joesai it looked like the slashed face of a loser. The man had even minted a pedantic name for their fool's venture: the Gathering of Outrage—useful if they should survive long enough to be written into history.

Bendaein planned to execute his Gathering with a meticulous respect for the formalities established by previous Gatherings. Such was Geta's meager transworld law. Joesai found himself displeased with this sensible approach. A Gathering was by its nature an aberration, a response to something the Chants could not anticipate. Who would have predicted human genes in profane bugs? What could any past Gathering say about *that* crime? Tradition was for

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the everyday: marriage and food and love and death.

Joesai had contempt for the self-righteous indignation he was hearing. The Kaiel knew what a Gathering could become! They were a Gathering's wardens who had stayed to feel its consequences! When the whisky flowed did not Kaiel jokes hint that Mi'Holoie's crusaders had sacked wealthy d'go-Vanieta—from whose ashes Kaiel-hontokae was to rise—more from the hunger of the trek than from piety?

His mind wandered to thoughts of Kathein as his eyes wandered from Bendaein to the wall tapestries. The weaving was of Orthei craftsmanship, a rich scene of mass Ritual Suicide, common enough as a theme, save that Joesai could not locate its source. Men and women making their Contribution had slit their throats rather than their wrists and blood ran down their bodies in crimson dye. One of the women reminded him of Kathein. The woven carvings of her body were tight geometrical designs. He smelled Kathein's perfume, his loins stirring while he half-returned the figure's glance. He would have faded into the tapestry to her couch had his startled ears not caught talk of a great land march.

Getans were a land-oriented people on a world of eleven disjoint seas. They tended to think in terms of mountain and plain, since every sea could be bypassed if necessary. No Gathering had ever had to challenge an island rule, and that in itself made tradition worthless in the present case.

"Taking Soebo by land we're more liable to drown than set table for Judgment Feast," Joesai lashed, speaking for the first time.

Bendaein was not troubled by sarcasm. "There is also land between here and Soebo. Would you have us row it or sail?"

Joesai grunted noncommitally. He was soured by the role he had been awarded. His mission was to set up an undefended Advance Inquest in the Plaza at Soebo. Such effrontery in Mnankrei territory would be Ritual Suicide without the trappings of temple decor. Prime Predictor Aesoe, acting through Bendaein, was brazenly asking him to make his Contribution to the Race, a sacrifice move in some larger strategy.

Of course there were advantages to heading the advance suicide party. He would be beyond Bendaein's communication lines. Then he could create his own campaign. What infuriated Joesai was knowing Aesoe knew he would disobey orders. Thus the master plan must call for a man to kill himself flouting clan discipline.

Aesoe can see my death and why such a death will be useful to him—may those who love him vomit at his funeral!

Joesai broke a toothpick and cleaned his nails. He was not listening to the Grand Strategy. *I'll need Noe,* he thought. One-wife was related to the sea-going peoples of the northern Njarae, who were not pleased with Mnankrei rule. *She will have access to ships.* He thanked God for his family. They were loyal, come gain or sorrow.

A conference with brother-husbands Gaet and Hoemei was in order. He felt the old wild pressure in him, the need to strike without thinking—which was

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his asset in an emergency but which he had learned was deadly if there was time for thought. Gaet and Hoemei could calm him. There was a way out. There had always been a way out. Hoemei could think through any trap.

Joesai's fierce longing for action pulled at him. Dreaming about Kathein, he sneaked away from the lifeless meeting. It was because of her that he had been marked for death. The sweet mystery of that woman had driven him to oppose Aesoe's will with relentless abandon, until his persistent violation of official Kaiel strategy bought the final disfavor from a Council dominated by Aesoe's ambition. In opposing Aesoe's seduction of Kathein, he had opposed Aesoe's drive upon distant Sorrow. Now he was expendable. He would be used to blunt the Mnankrei who also had designs upon the coast.

He remembered a happy Kathein splashing in the pool of their central courtyard, wearing a crown of love vine, pink with the first buds of flower. Those were happier days when his family courted her and she had been in love with them. Love vine was not flowering now, but he bought some anyway in the half hope it would touch her memory.

At her door he debated whether to whack the knocker or throw the arm of the electron bell she maintained to elevate herself above the rest of humanity. Either way he would risk having the door shut in his face. It was easier to pick the lock and just enter.

"Joesai!" She found him staring at his baby.

"Ho! He's a big one!" Casually he handed her the green love vine. "Remember when we made him?"

She threw the vine away. "I do not! And Aesoe will kill you when he finds you've been here!"

Joesai grinned at her as she trembled between reach and withdrawal.

"I have a machine for you," she said as if she'd just cooked up a special batch of poison. "Not because I like you, but because you'll need it, you fool. I have better things to do with my time!"

She tricked him into a room with four of her people. That was a disappointment; he'd wanted them to be alone. "What is it?" he asked, looking at a box built into a packsack, cluttered with black knobs and a reel of wire.

"It's a portable rayvoice. It doesn't speak but it gives off powerful pulses that can be detected here in Kaiel-hontokae even if you are as far away as Soebo. Teenae helped me with the coding. It is slow but it is redundant. That means, stupid, that your message will have so much repetition in it that it can smash through heavy noise and still be decoded."

Joesai was bewildered by her hostility. Few women had ever loved him. The ones who had still held him. He clenched his mind until the pain went away, then searched for some common ground. "Teenae spoke of the wondrous visions from Oelita's Frozen Voice of God."

" . . . that you nearly lost for us!"

He grinned contritely.

"More of God's words have appeared in the crystal this high morning." She sighed. "Joesai, I'm truly sorry if I'm irascible. I'm terrified. God is speaking to us; He has broken His Silence, and it's not what I expected. I need your opinion. You. *Your* opinion. You're the

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only person I know who cares enough about the heavens to understand what it might mean. I'll show you the latest silvergraphs."

There were only four clear pages of writings—in an alphabet that was almost familiar. He puzzled over the script. "I don't understand the key words. 'Destroyer' sounds like a grain mill. Pulverizer? But 'cruiser' and 'battlegod'?"

"A god who plays games, I thought."

" 'Twelve-inch guns'?"

"There was a 'gungod' in another fragment."

"It is very obscure."

"A form of the word 'kill' is used eighteen times."

"I noticed that. This is an ancient language. It speaks of the world of the Heroic Solo Chant." Joesai was awed to the point of religious revelation. "He sets His tale in the World of the Sky."

"What would 'weapon' mean? I thought it meant a knife because it is used to kill, but another reference"—she pointed—"refers to a cart. A knife with wheels?"

"Let's make ritual to reveal more pages."

"No. You have to go. Go now! Keep these pages. I have copies."

"Kathein. I came to see you."

"Out!" she flared, seeing his morose face and scorning his open love. "I *know*. You'd kill for me. Now get out!"

33

One cannot take a coward on dangerous missions or trust one's fortune to a fool. How then are cowards and fools to be employed? Fatten them while they entertain you. They are fodder for hard times.

From "The Prime Compendium"

Very carefully from behind the sand bags Joesai pulled the wire attached to the thumb that tripped the hammer. The air cracked! Then: deaf silence. Neither Joesai nor Gaet breathed for heartbeats. They ran over and examined the acrid-smelling tube. It wasn't split. A hole had appeared in the wooden target.

"God's Streak!" said Gaet, jumping up and down like a boy.

Joesai roared with laughter. "By God! You just tell those og'Sieth to build something and they build it." He opened the breach and put in another cartridge and screwed the breach closed.

"This pressure tube has use in some ritual?" asked Gaet.

"God alone knows. It is used for putting holes in things." The large brother examined the smashed target with some care. "I think it is mainly used to punch holes in distant people. A knife for cowards."

"A killing tool?" Gaet was not sure how it could be used in such a fashion.

"Now," Joesai gloated, "this Oelita will have a hard time denying God!"

"She's not going to change. Why should we all believe the same thing?"

"Why should we believe lies? Go ahead, believe a stone is a potato—but you'll break your teeth! She signs contracts with Hoemei as if she were Kaiel. Ho. I grant you she is as tough as biwood that bends but cannot be carved. Still her mind is pudding."

"She has a simple reverence for life that I respect."

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"She has a simpleminded reverence for falsehood. Before I leave I shall show her God. I vow that."

"The Death Rite is ended!" said Gaet as a command.

Joesai smiled cunningly. "You would protect her from words?"

"Husband, she's had enough," Gaet pleaded.

"If a Trial of Words destroys her, can she be Kaiel?"

"How will you show her the truth of God? How can you show the sky to a blind man?"

"And I ask you, how can she deny the revelations of God that appear from her own crystal? I'll show her this." He shook his steel spitter-of-lead-pebbles. "How could I have built this except at the command of God?"

"A God who preaches killing will not impress Oelita."

Joesai lifted the rifle to his shoulder and aimed into the hill . . .

"No!" screamed Gaet.

. . . and pulled the metal thumb. There was another crack! a terrible impact against his shoulder, and a flying chip of stone. "The logic that will destroy her mind if she is unwilling to change is this: God saved us from the Sky World, where they were breeding only for better killers. He did not speak to us of this until we had learned of ourselves to breed for better values. Now He tests us by temptation through Oelita, who has brought to us His words. Oelita is God's partner. She has unleashed upon us a thousand new deaths that lie outside of kalothi. Can her mind survive knowing that?"

The argument continued while they loaded and flung five lead pebbles. It slogged along intermittently as Getasun, at highnode, found the brothers concentrating their attention on a test of the portable rayvoice. The argument continued more vigorously on Gaet's skreiwheel, bumping back into the city, packsack loaded on the bars and rifle lashed to Joesai's shoulders. When Hoemei met them in his Palace apartment, its tables readied with cold feast, one of the Liethe playing softly as she sat by the window, legs crossed, the argument languished.

The Liethe, unhurried, concluded her melodious piece before she rose, bowed, and helped them out of their clothes. She was temporarily waylaid in her gentle task by a fascination for the cold steel tube with its strange attachments. "What is this?" Her fingers stroked the barrel.

"A device for quieting inquisitive women," Joesai joked.

Receiving his joke as a command to be silent, she led them to their bath without even a rustle from her robe. Her delicate hands began to massage away the dirt, running the warm water over their bodies in a relaxing glory.

"Have you been reading the revelations?" asked Gaet of Hoemei.

"Tonight I have a tryst with Teenae for the evening and she promises to read to me selections from the foul book. I heard this morning that Kathein has located the title page. Oelita's crystal is a fragment of *Volume 1: The Cradle Earth*."

"Earth—the Riethe of the Heroic Solo Chant!" yelped Joesai in an eruption of water.

"Very possibly. There are eight ma-

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jor parts to the *Cradle Volume*. We have only *Sequence 1: The Forge of War*."

"Those damn words that mean nothing!" stormed Joesai.

Gaet riffled through his neat memory for names and places and was smiling. " 'Forge' would mean furnace or kiln. There is a reference to a 'fierj' in the Children's Chant. 'Gowan gaien to *fierj* the shoes for Horse.' Among the og'Sieth on the shores of the Aramap the word 'foerj' means to work softened metal."

"I've crossed 'war' in my readings," Joesai recalled. "It occurs in conjunction with the words 'kill' and 'peace.' I speculate that it is a killing game and peace the opening move. The killing *was for the joy of it and not for kalothi*. In this World of the Sky children soaked in oil danced as torches for the victors. We can thank God for our deliverance."

"Praise God if such was the world of our conception," said Gaet.

"Praise God," said Hoemei with ritual fervor.

The Liethe girl said nothing. She dried their dripping bodies and brought them lounging robes dyed with red alizarin and returned to her tiny stringed instrument. Its tones permeated the conversation while she listened.

"I have not yet fathomed their governmental forms," said Joesai. "Conceive how popular a priest clan must be if its priests dare not visit another territory except in mobile temples made of steel four thumbs thick."

"Will you not need such an impregnable cart when you enter Soebo? It is time to discuss the Gathering." Hoemei had come to the purpose of this meeting of brothers.

"She must leave." Joesai was uncomfortable with the silken silent woman.

"She stays," said Hoemei.

The Liethe put aside her instrument and caught Joesai with her liquid eyes. "It is the code of my clan to take the secrets of our men to the grave. A Liethe is a priest's servant."

Hoemei spoke. "I invited her here. She is more bound than you might think." He brought out maps. "With the rayvoice I can reach farther than Bendaein. And I have done so. I have the outposts. Thus *I* control the final nature of our Gathering while you control its initial shaping. I anticipate massive support."

Joesai objected. "*Bendaein is himself certain of support. He is not certain that the Gathering will survive the trek to bring Judgment upon the Mnankrei. He wishes to travel light.*"

"Such are the contradictions within Aesoe's inner circle," replied Hoemei. "He has visualized a planetary economy but he cannot handle the logistics of a large Gathering. I can, and I have done the preparation—with your interests in mind, not his."

"All this while we feed the coast?" snarled Joesai.

"What is needed exists along the routes I have chosen. It is a matter of organization and coordination, not material."

Joesai was unsatisfied. "I would be happy to hit Soebo with a Gathering of Ten. I'd prefer it."

"But such a Gathering would lack moral force. Since the other clans would not have participated, they would not abide by its decisions."

"All irrelevant to my heaviest con-

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cern. Why is my death to be useful to Aesoe's ends? A successful Inquest in the Plaza at Soebo would require a verbal dancer, a man of great wit and irresistible charm, and a fast sidestepper. Even then, he would be murdered," Joesai commented ruefully. "I suggest you, Gaet. A much wiser choice!"

"But a rock-fisted man who insults at the first opportunity is what Aesoe wants."

"Because he needs a sacrifice to show Mnankrei reluctance to hold an Inquest!"

"Exactly," said Gaet.

"And if I do it my way, swift, and without foot-kissing, I still get murdered."

"Exactly," said Gaet.

"Which is why you will do it *my* way." Hoemei's manner was that of a surgeon at work. "You will not enter Soebo with your advance party. You will stay a day's march from the town and *do nothing*."

Joesai's whole inner body rebelled. "God's Itch, you know I have not the mental capacity to do nothing!" But he calmed himself. Hoemei was faster of mind than anyone he knew. Survival meant listening to an unshakably loyal brother who had proven his worth. "You know something I don't know."

"We are looking at the same chess board."

Joesai thought about that. His brother had just insulted his intelligence. "If I move to a position one square from Soebo and sit there painting my nails, you see a checkmate, eh?"

"In three moves—and you live."

* * *

34

At the Conclave of Summer Heart, during the final rounds of the kalothi contest, Reeho'na, greatest living o'Tghalie, unveiled a theory of many participant games that tells us why the bargainer who seeks to optimize the gains of each member of a group can become richer than the opponent-mind who seeks to optimize his personal gain by minimizing the gains of others.

Foeti pno-Kaiel,
creche teacher of the maran-Kaiel

The alliance document had come in from the printers. Oelita lay curled by the window of her room re-reading its lucid phrases, smelling the inked paper, and feeling smug. The prolog was all hers. Some of the free poetry was hers—she liked images—but the contract was mostly the wordsmithing of Hoemei's students, edited by the iron hand of Hoemei himself.

The writing of the agreement had been an awesome experience unlike any group work she had ever undertaken. Her confrontations with the Stgal had taught her that priestly councils were ponderous affairs where hidden decisions were made in a guise to appease and lull opponents. In contrast, the Kaiel mongered their wares with open enthusiasm and the precision of practiced survivors.

The group assigned to bargain with Oelita consisted of six men and five women, nine of them offspring of the creches. Three might take her for a game of kol at the temple, proposing, while they played, outrageous and often conflicting deals. The others would be

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off studying, creating new proposals, testing for flaws. Sometimes an old teacher of Hoemei's would sit with them mediating, teaching, guiding their efforts. They would be radiantly excited one day and dour the next after having dreamed upon the consequences. They were obsessed with consequences.

Oelita was familar with Stgal organizational architecture, which tried for no high structures. The Stgal governed by patchwork and emergency repairs. They were always having to redo what they had just done. With a lifetime of such experience Oelita was amazed to discover these intense young Kaiel feverishly designing an edifice built on piles driven into the past, able to support whole future generations. Each paragraph was placed in the document as if it were a foundation-stone under a temple whose upper stories would give solid floor to an eyrie for beloved, if chimeric, grandchildren.

Oelita became closest to Taimera, a studious hedonist, almost a child; taken only recently from her creche by Hoemei, her breasts, neck, shoulders as yet unscarred. She was a mischievous girl who had a sharp eye for which threads of the past a weaver must grasp to splice strength into any future design. It was a matter of honor to Taimera, and some anxiety, to have the kind of record which spoke of continuous good judgment. She was ambitious. She had been driven to excellence to escape her creche, and was driven now to reach the top councils.

Kaiel who created *effective* laws gained power, money, influence—and the release of their genes to the breeding rooms of the creches. Predictions accurate over the immediate future were rewarded, but the big stake was in being able to control *distant* consequences. The young group that Hoemei had assembled knew that Kaiel auditors, armed with hindsight, would still be checking over the effects of this document when its authors were well into their political prime. If by then the coastal peoples were prospering in their relationship with the Kaiel, the votes of each author of such success would be enormously magnified, but if the document failed to do what they were predicting for it, then they would find themselves relegated to some petty job in the bureaucracy.

Any Kaiel in good standing would be allowed to vote on the alliance before the cutoff date, but few would, because the Kaiel had a peculiar system. A mere *yes* or *no* was not sufficient. The Kaiel maintained that yes/no voting did not require careful thought and so encouraged sloppy lawmaking. A Kaiel who voted, and they were constantly taking the trouble to vote on something, made a deposition in the Archives stating in detail what he believed to be the consequences of this choice. The archivist did not accept the vote unless the consequences were stated in measurable terms.

The voting on any issue was sparse, but indicated the decision of Kaiel who had taken the trouble to inform themselves and were willing to gamble their political future on their estimate of the outcome. There was no central lawmaking council. A Kaiel was trained from childhood to make laws in the areas where he felt a personal responsibility.

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The nature of the attack upon the Stgal was to be a simple one. Copies of the alliance document would be distributed covertly among Oelita's supporters so that they would know she sought their support for a game-play resembling the de-priesting play of kol.

Young Kaiel would begin to infiltrate toward the coast, recruiting constituencies. A Kaiel, taking on a member of some coastal clan, would assume a personal responsibility to protect that person and, if food became short, to bring in food for him or pull him out to the refugee camps that were being built along the road in the Valley of Ten Thousand Graves. In return the represented one would transfer his name from the kalothi rolls of the Temple at Sorrow to the kalothi rolls of Kaiel-hontokae and swear to uphold the laws of the Kaiel.

"What of the Mnankrei?" asked Oelita.

Hoemei smiled. "It is convenient to be brother to a killer."

"You're sending Joesai to Soebo?"

"Aesoe is sending him to Soebo." Hoemei's smile broke into a grin. "Even Aesoe makes mistakes, and I'm ever willing to take advantage of them."

"I'm still afraid of Joesai."

"He has his gentle side. He does not dislike you. He is a child of the creches and all of us have been challenged by some form of Death Rite. It marks the soul."

"Wouldn't you like to abolish such cruelty?"

"The Death Rite is fair; it prepares you for Life, which is seldom fair."

Aesoe dropped by the maran-Kaiel mansion and took Oelita for a walk. He brought her to the botanical gardens where profane plants were bred for beauty. The flowers that attracted bugs by shape and color and smell had a similar effect on humans, who bred them for ever more exotic show.

Aesoe talked with her about the endlessly varied lives of the insects who lived among the flowers, a hobby of his, and he was genuinely glad to converse with one as field-wise as she. He specialized in watching the eight-legged kaiel. He laughed when he told Oelita how lazy the kaiel were, how they always convinced the hogburrow to carve out their homes for them by stroking the backs of the hogburrow with scent that stimulated nesting behaviors.

"Some bluenoses!" she exclaimed, moving into another wing of the greenhouse. Among the bluenose blossoms he made her an honorary Kaiel. He bestowed an arbitrary voting weight of 200 on her and told her that she would be allowed to vote on any issues involving the coast.

When she returned to the maran household, feeling stronger than she ever had before in her life, she met Joesai standing alone in the high ritual garb of priest. Even that did not daunt her.

"Aesoe just made me an honorary Kaiel. I have a voting weight of 200," she announced proudly.

"Ho! The madman is at it again, flaunting tradition. You think yourself worthy of such honor?"

"Yes!" she flung at his insult and felt gay. "Will you be voting on the coastal treaty?"

"I'm voting yes. But with some reservations."

Teenae had appeared on the balcony

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overlooking the inner court. "You leave Oelita alone, you big bully!"

"What are you filing with the Archives?" Oelita persisted, watching Joesai for every flicker of his expression.

"I think the program will be difficult to implement. It needs you, and I'm predicting that you won't be there."

Teenae sensed Oelita's shock and vaulted off the balcony to attack Joesai with her fists. He simply reached out and snatched his wife by the wrist and jerked her up into the air, while his other hand lazily reached around and took her by the roundness of her buttocks, tossing her casually, clothes and all, into the central pool. She made a huge splash, accompanied by Joesai's laugh resonating from his massive bones.

Suddenly, Oelita was very afraid again.

35

And all who fell that day, both men and women, were twelve thousand, all the people of Ai. For Joshua did not draw back his hand, with which he stretched out the javelin, until he had utterly destroyed all the inhabitants of Ai. So Joshua burned Ai, and made it forever a heap of ruins, as it is to this day. And he hanged the king of Ai on a tree until evening; and at the going down of the sun Joshua commanded, and they took the body down from the tree, and cast it at the entrance of the gate of the city, and raised over it a great heap of stones, which stands there to this day.

Excerpt from "The Forge of War"

The rumors about Oelita's crystal ran through Kaiel-hontokae like quickfire through desert thorns. It was an eye into God's Heart! It was an eye into Hell! The God of the Sky had broken His Silence! More sober talk simply puzzled upon a game called War.

No matter how she blocked the rumors, they seeped through to Oelita like water through cracks in a retaining wall. She shrugged. For all their sophistication the Kaiel remained a superstitious clan. Defiantly she took up Joesai's challenge on the eve of the great party. She was tired of his teasing her as if she were still a child believing in grumpmugs who lived in fei flowers and bit off thumbs.

Thus she arrived at Kathein's shop in party finery with Teenae.

Kathein guided them to a vaulted chamber of bulky magician's mysteries. Oelita saw tiny red insect eyes in glass cages. The apparatus generated heat, for it was warm in the room and an electron fan whirred like the wings of beetles. Kathein, moving as if she dared not generate shock with her feet, showed Oelita the Frozen Voice of God held by metal fingers that sprouted tentacles of wire. There were lights and glass lenses and the crystal was mounted in front of the great bellows of the silvergraph image maker.

Kathein hushed them while she fiddled with quick fingers. She waited and told them not to move, then pulled out a glass plate bound in black paper. "Parts of your crystal contain visions as well as words," she said to Oelita. "Koienta!" she called to a servant, "develop this silvergraph."

While she gestured and touched, pre-

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paring a new glass plate, Kathein politely explained her obsecrations to God. Oelita listened without trying to understand something that could have no logic. Joesai grinned, thinking she was being impressed. It was the ignorant men who were always so sure they were right!

Much later when Koienta brought the printed silvergraph to Kathein, the physicist stared for long heartbeats, flickers of horror crossing her face from the reflected light of the paper. Silently she handed the silvergraph to Oelita.

"What is it?" asked Teenae.

"God has been speaking to us this day!" exclaimed Kathein.

Oelita saw a still image of two rotting men hung up on thorned wire over mud. It was labeled at the bottom with readable numbers and almost readable words. *Two of 150,000 who died at Vimy Ridge, 1916.*

Where could such a picture have come from? Oelita scanned her mind, her memories, her logic—and found nothing. It was like putting her foot on a familiar step in the darkness, ready for the pressure of the stone, and finding nothing. The fall was dizzying.

"There are a quarter of a billion words in your crystal and thousands of pictures. All like this," said Kathein, leading them away. They waited while she dressed. Oelita did not speak. Joesai, smug, did not need to know what she thought. Teenae remained terrified by that one single peek through the Eyes of God. The silence broke only when the rustle of Kathein's gown descended the stairs. She appeared in brilliant silken blues, the platinum filigree of mask inlaid upon the noble cicatrice carved into her face.

Together they went to the Palace. The ballroom was filled by excited Kaiel scarfaces. They loved parties with themes. *The Forge of War,* what little was known of it, provided an awesome theme.

Musicians were dressed in garb copied from the silvergraphs, resplendent in painted papier-mache helmets, gaudy uniforms and breastplates of brass. Baron von Richthofen played oboe in red uniform, black cross full upon his chest, red goggles obscuring half his serrated face. Achilles, in great plumes of desert fire, tuned the strings of his ellipsoidal gourd. Hitler and Stalin, in black and yellow pinstriped pantaloons, thumped the organ drums.

Through the main entrance, blazing green and red Vatican Guards protected the arrival of the whisky kegs with proud halberds. Then across the ballroom strode the armored and scowling samurai, Takeda Shingen, *alias* Aesoe, a dagger in his belt so comically long that its tip almost dragged upon the floor, carrying a yellow and pale-blue banner atop a pole that read in vertical script: "Fast as wind; quiet as forest; fierce as fire; firm as mountain."

In agitation, Oelita swept over to a table where a neat pile of silvergraphs had accumulated, each pinned to a tentative translation. Painfully she began to read a page, referring to the translation when it became incomprehensible. Once she had to ask one of the hovering linguists to help her guess at meanings and odd grammatical structures.

Thinking there was just one (killer

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*clansman), he approached with the water. When he had penetrated the bushes, he saw there were about twenty men, and they were all in exactly the same (ghoulish) state: their faces were wholly burned, their eyesockets were hollow, the fluid from their melted eyes had run down their cheeks. They must have had their faces upturned when (the sunfire lit); perhaps they were (suppressor of engined-sailplane) personnel.**

She picked up another of the sheets.

They were ordered to lay down their (killing tools) and then were (butchered without intent to eat). Only the Caliph's life was preserved as a gift for (killer priest) Hulagu who made his entrance to the city and palace on (fifteenth sleep cycle of second moon cycle of Riethe year). After the Caliph had revealed (by force of pain) to (the war game-winner) the hiding place of all his treasure, he too was put to death. Meanwhile (butchering without intent to eat) continued everywhere in the city. Those who surrendered quickly and those who fought on were alike (murdered). Women and children perished with their men. One Mongol found, in a side street, forty newborn babies whose mothers were dead. As an act of mercy he (killed) them, knowing that they would not survive without mothers to suckle them. In forty days some eighty thousand citizens of Baghdad were slain.

What was this? this geyser of paper from some demon world come to spray and scald them? Oelita didn't believe a word of it—but when she did, for just a moment, she was horrorstruck by such unimaginable immorality.

How could anyone eat eighty thousand people in forty days? The bodies would rot; the leather would go brittle in the sun, untanned. To murder a man was horrible enough, but to murder a man and his relatives, too, so that there could be no Funeral Feast, that was unthinkable!

Her heart was pounding as she watched ten Chanters file into the room in mud-brown cloaks wearing their voice amplifier masks in strange goggled shapes with gross noses.

"Chlorine masks from the Great War," said the linguist who had been helping her.

The Chants began, telling, in thunderous sinusoidal rhythm, of the God of the Sky delivering His Race from some mystery too frightening to look upon. The wooden instruments faded in; the strings weaving tales of warrior and fire while Hitler and Stalin beat upon their organ drums and the horns wailed. The Chants muted to moaning, one voice alone holding a delicate melody. Then out of nowhere three naked Liethe sprang through, their child-smooth bodies boneless in their leaps.

They attacked each other, circling, lunging, stepping aside, flying over one another like bodies being juggled. Six daggers appeared magically in their hands while they stalked enemies, making alliance and betrayal in deft moves. The blows began to sound as screams. Each touch pulled forth a streamer of red silk like spurting blood that attached to wrist or shoulder or hip or ankle, proliferating. They fought among streamers, and now the streamers lurched

*From *Hiroshima* by John Hersey.

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and shuddered as the weaving motions boiled the blood that enveloped the dancing bodies.

The crimson silk lost strength, fluttering, swirling, diving, dividing into three stained bodies now topped by silver skull-masks. A jerk. A lurch. A stagger. A final battle to wound the already dying, to use one's fading strength for destruction, then death throes among the mourning musicians. Only a glance of flesh did the audience get of Liethe slipping away, shucking their costumes in a convulsion that slowed and flowed down the steps into an empty red heap upon the floor.

Aesoe was stamping his feet. The Kaiel began to shake the building with their collective stamping until the naked girls, still in their skulls of silver metal, ran out from where they had disappeared, bowed, and ran away again.

Oelita turned from the spectacle. The pressure was building up within her to panic level. Her attempt to form an explanation for these impossible words was circling in failure. A hoax? Were the Kaiel building up a lie about Death to justify a coming bloody conquest of Geta?

But it was *her* crystal.

Who could write so small in visible-invisible ink? Who could conceive such stories where violence was the only means of transferring power? They could invent stories, but who could invent so many? Where was the Getan who would tell a story of mass murder without ending the story in a gluttonous Feast? Helplessly she moved through the crowd of feverish Kaiel, seeking Joesai. He was staring at silvergraph pictures.

He showed her one. A pair. To the right was a burning child running along a road beside a burning village with the title *Vietnam*. To the left was a burning child leaping off a road with a rocky mountain village in the background titled *Afghanistan*. The collective title was *The Superpowers and The Third World*. She remembered her twins roasting upon the spit.

"Have you found no love among all this?" she asked.

Silently he showed her another silvergraph. A woman was being stretched apart by a machine. *The Dominicans Save the Soul of a Heretic*. "Or would you prefer a tale of the Christian clan exterminating the clan of Albigensians in the name of love?" He laughed and handed her some dried bees to munch on. "While you are putting it all together think about why you can eat raw bees and why eating any other insect will sicken you unto death."

"You think the only explanation for this is God, don't you?"

"I'll listen to a better one."

She changed the subject. "What's that?"

"The script underneath says it is a steel beetle big enough to carry five men in its belly across the desert. Its duty is to throw metal rocks at men."

"How horrible!"

"I'm getting ideas."

"Joesai!"

"This one I like especially. It is a giant intelligent candle that rides on the strength of its flame from one city to the other side of a world where it is cunning enough to find another city which it extinguishes in one blow by conjuring a bowl of sunfire."

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"Joesai!"

He smiled at her, glad to share his own horror with someone he knew could understand. "I don't always think Death thoughts. Anything with jumping legs that strong could jump up to God and talk to Him. I have some questions to ask."

"Would you ever descend upon a city and kill more people than you could eat?" she asked.

"What a stink that would make."

"I'm confused. I don't know what anything means anymore."

"It's obvious what it means."

"For a simpleton like you! You invoke God. God can be used to explain everything!" She was livid.

"Can't you tell what it means?" he asked gently. "This Riethe is the world from whence we came! Don't the Chants say that God brought us across His Sky to save us from The Danger?"

"You don't even know your Chants." She was scornful. "The Chants mention Riethe but they say we fell from the Star Yarieun."

"There is no agreement on that. The same Chants vary from clan to clan and land to land. Our Outpacing Chant mentions Yarieun, which we call Yarmieu, as the last resting place."

"How can the Race be saved from itself by moving across a sky?" She was full of scorn. "If I am poisoned and live in Sorrow, will moving myself to Kaielhontokae leave my poison behind? If I am afraid of my navel, will changing houses change that? You can't run from *here* because *here* is always where you are!"

Without letting Joesai reply, she lost herself in the crowd and left the Palace. She stood beneath the nested ovoids, her mind in chaos. Who were the Riethe and their Cult of Death? Her maelot theory of human evolution no longer made sense.

There was a God.

Her world reeled. There was no God but God had revealed Himself. She turned back to the great door of the Palace, insanity striking her senses. Joesai was standing there. Joesai was God, and God was Death, and Death had found her, grinning.

She backed away. "Don't come near me!" He took a step closer and she shifted two steps into the street. She was pregnant by Hoemei, and had been on the verge of creating the blood that would wash the child away, and now Joesai was coming after it with death, and she wasn't going to give anyone that child. Not again. Not ever again. "Go away," she said. He came closer and there was no one else about. "I'll kill you!" she cried with deadly intent.

He paused. She was confused. How could she kill God? When God fell into the sea like a lost glowsting, He merely rose out of the mountains again to reclaim His Sky. Her fists were clenched in front of her. "Go away!" He left and she turned and ran, stumbling in the mud somewhere, to lie against the cobblestones of a filthy gutter.

She thought of her defiance; she thought of the people she had turned from God, fomenting rebellion, and the horrors she had just seen that God had taken them from, that she had carried around with her all her life since she had been a child.

"Oh God, forgive me. I've blasphemed. I knew You and I rejected

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You, and my heart is full of sorrow." She rubbed her face in the dirt. "Oh God of Sky and Stars and Wandering, thank You for bringing us here from whatever misery You saved us from. I thank You again and again." She rubbed her tears into the mud, her fingers clutching stone. "Forgive me."

36

No man can live in the future, but those who are not caught up by the struggle for some future find deadly surprises in their now!

Inscription on the arch
of the Kaiel Archives

A hard-earned gold coin can slip through a hole in a pocket. In this fashion Oelita vanished.

Aesoe, wearing only sandals with bath towel draped about his shoulders, raged and paced in his den, his genitals swinging to his wrath like gongs. He gestured quick motions that seemed to skin an invisible adversary. His Liethe lay sprawled on the cushions of the bed, a sheet between her legs, head buried from the ranting. She wore a tiny amulet on a single fine chain of gold about her neck.

Hoemei, unshaven and unslept and still in party dress, moved not a muscle. He carried a note from the Gentle Heretic, all they had been able to find of her. It said: "Forgive me for being wrong. Please, please take good care of my people." Nothing more.

Aesoe raved. "See that Joesai banishes himself from Kaiel-hontokae by the first sunset of the Reaper or I will personally conduct services for his Ritual Suicide at the Temple of Human Destiny! He is a meddling nuisance, fouling the best plans of genius to soothe his woman-hating heart! I told you and I tell you; that woman is vital. Find her before I graft the skin of you, still alive, to the wheels of wagons!"

Events disgruntled Hoemei. He had grown fond of Oelita. Her energy and intelligence pleased him, even to the point where he had been seriously dreaming of taking her as a replacement for Kathein. The family was far less sure of her suitability but he saw them beginning to meld with her, even Joesai in his churlish way.

Now Hoemei was left with a breach in his plans. It was like having a route set to ascend a craggy mountain and finding the chosen path suddenly rendered impassable by landslide. He would have to send Gaet into Sorrow sooner than he had anticipated. Who else could convince Oelita's people that she had not been murdered in some treacherous deal? A delicate mission.

Shifts, shifts. Quickly he would have to find others to do Gaet's work here in the city. The inconvenience annoyed him. He cursed Joesai for the stubborn pressure he had kept on Oelita, then sighed. That was the price a Predictor paid. The future did not happen. People created the future with moment-to-moment action and decision, always adjusting to the unexpected.

Hoemei bowed, dropping all the way to one knee. He had delivered his dreadful message. The Liethe creature stirred and stretched, smiling gaily at him behind Aesoe's naked haunches. He had wondered but now he recognized Honey's

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special sweetness. The unnatural smoothness of her back launching itself into the summer hills of her buttocks sent a shiver through him more fearsome than Aesoe's anger.

"Come here," she said.

He did not dare move lest he further provoke Aesoe. Nor could he find words.

Lazily she brought herself upright, amused at the silence, aware that her movements suspended even the Prime Predictor in mid-emotion. The chain with its tiny amulet swung between her breasts. "My lover is afraid of my lover." She was watching them both so that neither knew whom she meant. "Come here."

Hoemei remained frozen.

Her eyes, as blue and flecked as Assassin's Delight, remained fixed on him. "Aesoe, tell him that you are not afraid to have him touch me, so that he will come here."

"By God's Balls, Hoemei," roared Aesoe, his mind completely distracted from its train of thought, "Don't just squat there on your knees playing her game! Crap and wipe yourself!" He nudged Hoemei impatiently with his foot.

"My nice man," said the Liethe called Honey, suddenly at Hoemei's side. "You must give this to Joesai." She slipped the golden amulet from around her neck and pressed its tiny eurythmic form into Hoemei's hand. "No man comes to harm wearing a Liethe charm." She rose gracefully to face Aesoe. "You see," she said innocently, "I protect your man upon his mission. I am with your Gathering. Liethe overcraft will guard him."

"Nothing will save that imbecile!" snarled Aesoe, remembering what had moved him to anger.

Hoemei carried the amulet to Joesai with Aesoe's wrathful instructions. Joesai remained stoic about Oelita's disappearance in the face of all anger—as if she were merely a promising student of his who had gone bad. Teenae returned from her search and lambasted Joesai out of worn frustration, blaming him. He took it all like the desert soaks a cloudburst. "She did not have kalothi," he said, genuinely saddened, for he too had grown fond of Oelita.

Hoemei knew his brother's mind. Joesai suspected that Oelita had slit her wrists somewhere, and worse, slit them in hiding, denying even friends the nourishment of a Funeral Feast. She had found the Awesome God and been shattered by the magnitude of the concept. Those would be the silent thoughts of Joesai. He would pity her without ever being able to say so. What was a woman if she could not let awe run through her veins without being destroyed by the power of it?

Oelita had failed at the Sixth Trial. The eve of every victory, it seemed, was married to pain.

37

Your enemy wins once you begin to take his strategy as your own strategy, and his means as your means—for then you have become your enemy. Do not be deceived that you use mellow words to describe your imitation and harsh words to describe your enemy. An in-

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finity of words may be used to speak of the same action.

Dobu of the kembri,
Arimasie ban-Itraiel in "Combat"

Noe watched Joesai leave the city with eighty men—only ten of them experienced—her heart filled with foreboding. She had climbed by herself to the tallest raceway of the Northern Aqueduct so that she could keep her husband in sight as long as possible, a climb she had not attempted since a distant day as an adventurous child. Now, the daring in her unquenched, Noe held herself by the brickwork and looked out over the first column of the Gathering, ignoring the icy splashes of water that rippled across her fingers.

Joesai was taking his column by the eastern route around the Wailing Mountains to avoid Mnankrei spies, planning to cut through to the coast at a point far north along the Barrier Pass. Hoemei's original scheme was a shambles. Aesoe had forced their departure so prematurely that they carried only thirty rifles and were missing some supplies altogether. Maybe Aesoe had done that deliberately to derange Hoemei's plans since his prediction of the outcome was already registered with the Archives.

Noe was furious at Joesai for the trouble he had caused them, but she also remembered that the family had sent him to Sorrow with Death Rite in mind and only little Teenae by his side to restrain his hand. It was, in the end, a mutual decision that had caused the trouble. As a consequence, Joesai had been isolated, dressed for the spit fire, and banished from Kaiel-hontokae. Was it for him alone to carry the ire of the Expansionists? Of them all, he was the most vulnerable—and so her first duty was to him.

Noe waited impatiently the few days it took the og'Sieth to assemble twenty more tested rifles of the new quick reload design and then followed her husband with her own party at a forced pace, ruthlessly wearing out her Ivieth so that she might catch up with Joesai. Karval ngo-Ivieth, her lead porter, found fresh clansmen where he could and the pace never slackened. Sometimes when she was ready to drop, he carried her, without complaint, like a scarf about his neck.

"Karval," she once asked him, "what is your opinion of this Gathering?"

"It is a matter between the priests."

"How are we to rule wisely if we know not the feelings of the underclans? Come! If your silence hides disagreement, I must hear!"

Karval considered. "The Mnankrei interfere with our breeding rights." His words were weighted with disapproval.

Ah, so Hoemei may really have the scent! If Mnankrei fingers no longer touched the soul of the underclans of Soebo, then, given forbearance by Joesai, it might be possible, as Hoemei thought, for Joesai to inspire a revolt and to survive by taking its leadership. Aesoe anticipated no such resentment in Soebo. His plans were built around the death of a martyr.

Noe's studies of *The Forge of War* had left her wondering that Getan clans had not invented the game of war themselves. The intrigue, the conflict, the hatred, the rivalry, the clash of ambition was there—the raw material of Riethian war. Perhaps her Ivieth's answer was

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the clue. On Riethe the clans were organized vertically; they had fierce up and down loyalty but only the weakest lateral loyalty, something inconceivable on Geta, where horizontal loyalty was unbreakable and enforced by swift death.

She tried to imagine what would happen if the Ivieth of the Mnankrei, half of whom must have wandered in from another realm, were ordered to kill the Ivieth of the Kaiel. What would they do? Laugh? Grow red with rage? Gape at such foolishness? Politely ignore the order? Kill Mnankrei? No Ivieth would destroy the bridges and roads of another Ivieth, nor harm the travelers that their Getawide clan-vow protected. Noe smiled at a preposterous thought she could not have entertained a few weeks previous—how difficult was conflict when priest had to march against priest, and ethics forbade the killing of more enemies than one could eat!

Oh, those Riethe leaders were spoiled with their bowls of sunfire, their poison gases, and their specialized killer clans; the willingness of farmer to kill farmer, brother to kill brother, sister to kill sister, husband to kill wife, and right hand to stab left! *Here we priests have to do it all ourselves! And God's Wings, on foot!*

At a spring near grassy and bramble-filled foothills, Noe dropped to the ground beside the rifle wagon during a march break. Curiously she unpacked the topmost of the lethal tools, loaded it carefully, and lying prone on the ground, held it against her shoulder. After breathing deeply—twice—she squeezed the metal thumb, immediately forgetting where she had aimed in her surprise. She never saw the pebble strike. Five lead pebbles later, meticulously flung into the hide of an old tree, she felt ready to attack any man who might attack her husband.

She was sad she was not going to Soebo with the Advance Court. She would be stuck on the coast, working with her seagoing relatives, keeping open the sea-leg of the Gathering's supply line.

They found Joesai camped outside of the village of Tai. He was on a flat hill above the farmlands, teaching one of his fresh creche girls how to catch knives and throw them. Her hair was tied in a bun, her breasts shimmering with sweat and blood from a minor gash. The girl yelled and ran to Noe's wagons where she emerged waving a rifle in triumph, the hontokae carved into her face distorted by a smile.

Noe hurried her husband to his tent and fed him water, caressing him as she did so, eager for his body. "A bloodthirsty pride of children I have here," he glowed.

"We must forbid them to be Riethe," she said. "It is important."

38

Who shall judge the priests? They are not monitored by our God of the Sky for He passes overhead in silence. The priests rule by the grace of the underclans.

The nas-Veda Who Sits on Bees,
Judge of Judges

Being young had disadvantages. Youth was subject to the absolute will of the crones. And the crone mother saw fit

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to drill her on the Four Justices and the Lattice of Evidence and all the rest of it. She was being readied for something. They always gave you the vessel before they filled it. The vessel was bisqued and then baked to stoneware hardness by the fire of their breathing. Methane-snorting witches!

But she knew she would be nothing without the Endless Training. There would be no palaces, no mastery of grace, no adoring men, no power, and no pleasure of the hunt and kill. The Training was the price. One even learned to love its rigor.

Even exhausted, Humility lay awake imagining the se-Tufi With Saucy Breasts taking over the persona of Honey while she was away. Would Saucy bring a nightslip petal for Hoemei to smell? *Why do I care?* In all her intricately memorized knowledge of the se-Tufi, there was no hint of jealousy. Did a se-Tufi who felt jealous fear her shame so much that she kept the emotion a secret from all her sisters?

Once Humility had, on orders, smothered a Lineless Liethe. The girl had slapped her lover's wife. It had been somber to feast upon such loveliness. Weeks later there was nothing left of the beautiful body but the warm buskins worn by the crone mother. Jealousy was a foul emotion, lethal to the cause of the Liethe. The penalty was always death.

Dawn of the high day brought an early rising and a breaking of fast with a contemplative hag. "Every sunrise takes you closer to your cronehood. You will learn much as my ambassador to Soebo in the crone's court. You rebel at the cant I have been teaching you, but in the Soebo hive you will see how The Lattice of Evidence sifts for crime. Your youth is over when you are ready to decide for yourself who must die. Do not be impulsive. Remember always that you are acting for me and that I shall judge you. You leave tonight."

"Shall I not see Hoemei again?"

"No."

Only the White Mind seared away her tears. She bowed her head to the floor. She swore allegiance to mother and hive and clan. And cheated. Saucy was her friend and sister. They arranged a brief switching tryst so that she might say goodbye to Hoemei who would never even know that she had left.

She took the route through the Valley of Ten Thousand Graves to the coast, an arduous journey that one did not make frivolously. She found a proliferation of the strange skrei-wheels and bargained rides in exchange for a hand at pushing on the difficult grades. There was new roadwork everywhere. A conqueror lays out roads.

Before reaching Sorrow she turned northward through the mountains, taking a tortuous trail to the coast because of a signalman who worked the great tower atop the peak of Blue Concern. He was marked for death. It was a minor detour.

After pushing the body off a cliff to be dashed on wet boulders and pounded by the waves, she saw a ship far at sea, its sails full, Mnankrei by the size of it. The sight pleased her. She did not relish more walking or those hideous wagon rides. Ships she had always loved and here was a moonlit sea to explore.

A small single-masted vessel bobbed her from tiny harbor village to cove until

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she found passage as High Deck Sensual on a large merchantman. It was not an ideal berth. The captain, whom she expected to be in charge, had been moved out of his cabin into the quarters of his mates by a certain Summerstorm Master Krak—a weighty official of Soebo on a tour of inspection, disinclined to share his appropriated luxuries with a mere woman.

Instead of being mistress of the High Room, as she had contracted, Humility found herself being shifted between two small bunks, three mates, and a captain who was in a foul mood for being ordered about at every change of tack by his finicky superior. Nor were all the seamen drafted from the Vlak or Geiniera clans as was usual. She had signed on to service the sea priests, unaware that the ship's crew contained fifteen virile Mnankrei doing their sailing apprenticeship.

Paraded before them along the deck she paled, and somehow the youths noticed. They were in awe to have a Liethe at their disposal and, among themselves, overruled their captain, deciding that their collective lust would be too much for her. They fixed up a private bed among the oily smells of the dark rope room so that she might have a place of respite from the fetid mate's quarters. They gave her candles and smuggled special foods for which her smile was enough reward. Such unanimous gallantry warmed Humility and she responded by being free with her touches. Often she sang for them and once spent an evening by the light of Scowlmoon helping the crew mend ratlines.

One gray morning, while an easy rain was dropping upon the sea, a small ship hailed them and a wounded man was brought aboard. The patrol had tried to stop a boat smuggling the false judges of the Kaiel across to Mnank. Explosions had thrown pellets at them and one of the men had taken a lead ball into his stomach. Humility tended the man that she might hear him speak of this wonder. *The rifle!* How would these men of the sea respond to this awesome Kaiel magic?

"We couldna come close," said the sailor in his pain. The wound was days old, but movement to the larger ship had opened the hole and his suffering was fresh.

"At what distance were you taken?" asked Krak.

"Five hundred man-lengths."

Krak was surprised and asked for more details to confirm the estimate. Finally he shrugged. "Are you frightened?" he asked sarcastically of a young Mnankrei who seemed most awed by this report of metal flung through the air like seed popping from the ripened pod of a hurler.

"The game has changed." The verbal response of the apprentice was formal, correct, revealing neither fear nor foolhardiness.

"Such explosive skill is of no use to a clan which shall die even as it seeks to find an enemy who is not there." Krak smirked and said no more. He dismissed the bearers, indicating that they should carry the wounded man below decks. Humility, her assassin's mind alert to allusions of death, was left to wonder at a perishing that a rifleman could not strike against. Krak had not flinched at this evidence of Kaiel power.

A windy day brought them into Soebo

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harbor, a long extension of the river. Ancient stone structures of the uniquely massive Mnankrei design reached into the bay, crusted at the waterline, some of them built on the ruins of older structures. Ships cluttered the wharves and canals. Flotsam floated and bobbed on the water, carrying with it the slight smell of sewage. Endlessly the city rose over the hills of the river valley.

Humility had never imagined that she would be so happy to see land again. One of the young Mnankrei, sensing her mood, pulled out a small flute and began to play to her from his seat on the ropes. She turned and listened. She picked up the melody. For a while she hummed along and then began to sing in her high voice of a city that waited for sailors to return from the sea. Soon she had an audience.

A tall Geiniera, stooped from the low ceilings of the ship, brought out a flask of whisky, brewed from the somber barley of Mnank, and passed it around to the beardless Mnankrei he had been training in the lore of the sea. They drank. They clapped. The captain stepped from the High Room to watch. Soon she was dancing for these men who were her friends, Liethe in every movement and flirting gesture, thriving on their attention.

She had arrived at the greatest city on all of Geta, a city of rumor and fame and debauchery, nurturing a Liethe settlement unequaled in size except for Hivehome on the islands of the Drowned Hope. This was civilization and she could dance to its glory on the deck of one of its magnificent vessels. Kaiel-hontokae was but a desert village grim in its determination, a waystation in her past. Kaiel-hontokae had only Hoemei, her lover, whom she still remembered a little, a man so deliciously arrogant that he was foretelling the imminent fall of this great city which would crumble, he said, on the day he chose to touch it.

She laughed. Did all lovers seem so foolish once they had been abandoned?

39

Supreme excellence in warfare consists of breaking the enemy's resistance without fighting.

Sun Tzu in "The Forge of War"

Six small boats were chartered from the Goei, a carpenters clan whose members often took up seafaring. They knew the foggy coast of the Island of Mnank as a sneak thief knows the windows of the nearest rich community. The shoreline twisted in such a noise of bays that only the best were used by the Mnankrei trading fleets. Smugglers thrived. Thus the swift and tiny craft of Joesai's party beached on a sandy inlet in the rosy twilight fog without mishap. The trek south to Soebo passed through a land wondrously lush. In some places the ground was even moist and choked with flowering rushes. They traversed the eldritch woods that grew the sturdy timbers of the great ships until they broke into the cleared plains, where they began to meet their first farmers.

Joesai moved warily. Sometimes he took out the bound book Kathein had given him and pondered upon the difficulties of Hannibal or re-read the obscure details of Sherman's march through

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Georgia. Sherman never maneuvered in a direction which revealed his destination. The strategy pleased Joesai and he adopted it by striking across the Yearning Valley toward Ciern rather than directly over the central plains to Soebo. When camping he ordered the construction of a perimeter defense in the fashion of a Roman Legion advancing through hostile territory. All the while he made quiet contact with the people.

Besides his fascination for the pages of *The Forge of War*, which he carried in a waterproof sack of baby skin, he was reading Oelita's book in the edition published by Teenae in Kaiel-hontokae. The Gentle Heretic's forays into biologic enraged him, but she made good sense with her stories chiding priestly alienation from the underclans. It was interesting reading because his life now depended upon the good will of the surrounding underclans. The country folk they were meeting had been propitiative and overawed by Kaiel discipline—but if crossed could turn murderous.

Joesai's expedition lived off the land out of necessity, but his band had strict orders to make sure that the farmers were repaid in work and so they found their pace slowed by remortaring stone farmhouses or digging wells or repairing a weak bridge or cutting ripe pa-twine for a family short of stout labor. Such exchanges caused some amazement since these country clans had never seen priests doing manual labor. Joesai enjoyed working on thatched roofs and digging ditches. He was in no hurry to reach Soebo where Mnankrei strength outnumbered him hundreds to one.

What they learned while they toiled was shaping his whole strategy. The discontent voiced by every clan always stemmed from Mnankrei use of continuous culling, which was seen as a threat to the established clan breeding rights. Joesai fanned the discontent whenever the subject was broached by using one of Oelita's favorite arguments modified slightly by his own prejudices. During *times of plenty*, culling by the priesthood was sacrilege and could not be justified as a pursuit of kalothi because kalothi did not demand the death of an inferior man, only that he spill his seed upon barren ground. Meat was a famine food.

Joesai laughed when he found himself making converts to Oelita's heresy by campfire. It did not bother him at all that the Kaiel used continuous culling within the creches of their own clan. That was different. That was an internal clan decision. Common law applied only to cross-clan affairs.

Once, to foment rebellion, he led a disciplined attack, eighty strong, on a local temple and freed a retarded woman, beloved by her father, who was being readied for Ritual Suicide. The only Mnankrei priest—there were a mere five of them—who was foolish enough to protest by drawing a knife was shot from a distance in the leg.

That evening Joesai lay by his campfire, without his family, alone, relaxing after reading, watching the brilliant stars Stgi and Toe rise like motes on the zephyr of Geta's swift rotation. The immensity of the white sands of the night sky contrasted the vast stellar universe of *The Forge of War* against Oelita's tiny planetary effort—a hot black iron skillet and a dancing drop of water. The People of the Sky would be out there killing.

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God had seen fit to give His Race a history that told only of a beginning when the Race and the People were still one. Long ago, eons ago, the People of the Sky had sunfired the city of Hiroshima while they maintained laws against killing criminals. What would their power and ferocity and inconsistency be now after millennia of practice among the stars?

By now they might be everywhere, singing their alien Passage Chants. What if they reached Getasun with their star-wind sails? To what hideous level would they have perfected torture and killing-without-eating? Was Oelita's love powerful enough to shape a planet that could hold off even the People of the Sky?

Eiemeni dropped down beside Joesai near the fire, bringing with him his woman. Her name was Riea, and she was a fierce one. Perhaps that was why Eiemeni had come to cherish her and stumbled about, attending her like a foolish boy.

"You are watching our love stars," she said.

"They may be death stars." Joesai was sour.

"You read too much, old man," she replied affectionately, adding a stick to the fire.

"Reading mellows me like mead in a burned cask."

"You've been thinking of thirst that isn't slaked by mead," said Eiemeni.

"I've been thinking of the ironies of life. You've been with me for a while now, Eiemeni. You saw me drive Oelita to madness. I forced her to believe in God, to see Him and to know Him. In the meantime I've become an atheist who slobbers over the philosophy of non-violence."

"Joesai," said Riea, "talk plainly to us."

"There is no God of the Sky."

Riea laughed. "You've been without your wives too long." And put her arms around him.

Gently he cuffed her.

She only snuggled closer. "Keep your eyes to His Sky. You do not see God? In a moment you will see His Streak overhead."

"God is a rock."

"Do you believe everything you read? Even God plays jokes." Eiemeni laughed, whacking his bond master with the back of his hand.

"I've re-read my pages of *The Forge of War* so often by now I can almost think in the ancient language. They have strange words. There are battlegods and helicopter gungods and airgods and sailing gods and steamgods. Language sneaks through time like a miser on new adventures in old clothes. Our word for *ship* is their word for *boat*. Our word for *God* is their word for *ship*. Their word for *sky* is our word for *highest*. Their word for *sun* is our word for *star*. If we said *sky* to our ancestors they would think of the night sky, the stars. *God of the Sky* translates to *ship of the stars*. Think about that for a while."

"You're mad!"

"Yes." And he laughed the great laugh, understanding completely Oelita's madness.

"God is intelligent!" admonished Riea.

"God reasons!" stated Eiemeni.

"God is silent," said Joesai, "and His Sky is full of pin-bright points of

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death-without-nourishment. Perhaps they cross the void even now with a cargo of sunfire for our cities."

"*The Forge of War* drives you mad!"

"It has already driven me mad! I see dark visions among the futures. Kalothi can be overwhelmed. Poisoned. Trampled. Snuffed out. All of it." He began to pile wood on the fire by fistfuls.

"Stop it!" said Eiemeni, holding him. "All of Mnank will see us!"

"Kalothi shall burn brightly! The beasts of Riethe are driven away by fire, so says their book. Tomorrow we turn course and march on Soebo. The pettiness of such as the Mnankrei will destroy us! The Kaiel shall rule! All power to the Kaiel!"

"Eighty of us shall burst upon Soebo and slaughter the lot of them?" chided Eiemeni quietly.

"Ho! Do not think slaughter! Then you become as the Insect Lords of Riethe. Think of kalothi receiving its wood! The Last of the List, those Mnankrei who dare call themselves priests, shall die for the Race. Through their Contribution we shall bring Oelita's gentleness to our world."

40

The priest who is a trader will do better than the priest who is a philosopher.

Prime Predictor Tae ran-Kaiel
in "The Making of Mead"

Like the classic Nairn thrust of kolgame, they came out of the mountains through the Valley of Ten Thousand Graves to challenge the suzerainty of the Stgal. Teenae was astonished at the difference of style between one-husband and three-husband. Gaet was no Joesai hiding under covert masks and concealed action. He was Gaet maran-Kaiel in formal clanwear, making use of conditions created by the Mnankrei before the Mnankrei were in a position to exploit them.

Even in the wilderness Gaet insisted on the life of wealth that Joesai discarded willingly. He ate with his wife in elegance off an inlaid table with stubby legs that was loaded with the best mead, flowers, and steaming food. They slept in a tent near a pot of coals to warm them. He was never too tired to court her, or to lift up the spirits of the lean hags they met with a little flattery that filled the heart if not the belly.

Teenae recalled a road long ago when she had been a sullen waif off the auction block and he had been wooing her with luxuries that had both tempted and frightened her. With Gaet along, this road did not seem as stark as the road she remembered treading with Joesai on her first trip to Sorrow. Then their only luxury had been a palanquin.

They found that the foothill wheat crops were being devastated by the underjaw. The people were lean and in a hoarding, frugal mood. The Stgal were calling up the Low on the List for their Contribution and meat was more available than usual. Events had created a perfect door for Kaiel penetration—the desperate moment before hope metamorphosed into resignation. The Stgal offered the Discipline of the Famine, a martyrdom ingrained in the Getan soul because it had saved them so many times before, but the Kaiel offered food.

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When Gaet negotiated he fed his guests. The welcome tent was a large one, erected wherever they moved, now sitting in a field of the foothills among the wildflowers. It was not a busy morning. Two curious farmers representing a local Nolar tribe had passed through the flaps and been given bean sauce on bread with a bowl of soup. Only after their plates were clean were they led to a young Kaiel clansman who squatted on a mat with them in the open air, exploring their goals.

Where had the Stgal failed the Nolar? How were the roads? Did an adequate supply of medicines reach the hills from the Stgal chemical cloisters? Did the Stgal pay well for the women they bought? How many of the Nolar clan members did they think they would lose to the underjaw famine by starvation? by Contribution?

The Nolar men clutched their robes about them and complained that the Stgal did not give back as much meat to the countryside as they took from it. The Kaiel youth nodded and made note. This gripe he had not heard before, though Stgal distribution irregularities were a constant complaint.

Gaet was designing his support staffs along the Hoemei model. All of his administrative groups had to predict the effect of their efforts, and if their predictions failed, the group was dissolved, inducing Gaet's followers, like this young man interviewing the Nolar, to make reliable promises. It was too soon for change to be noticed yet, but they all knew that Gaet would long remember the good predictors.

On this morning Gaet dispatched the five fingermen of his Left Hand Council, with their groups, on a recruiting foray into the territory of a small hill temple that seemed undermanned. He was preparing for a major move downslope into well-defended Stgal territory. He sat on a carved wooden stool in his own tent in conference with his Right Hand Council and a local Ivieth chief who had come in from Sorrow under cover of night.

Oelita's general contract with the Kaiel was explained carefully to the giant by the pale light of a bioluminous globe hanging from the tent poles. Teenae fed the glowing bacteria of the globe and listened, learning.

Gaet was meeting representatives of each coastal clan and setting up committees, loyal to the underclans, to monitor the contract, to spot violations and inevitable flaws. First he had been concentrating on wooing the farmers near his lines of supply but was now swinging his attention to the Ivieth, who were the most mobile clan of Geta and the people most accustomed to shifting loyalties.

As a matter of tactics, Gaet was signing up people no faster than he could build the apparatus to serve them. Consequently Kaiel protection remained scarce and in demand, thus allowing him to negotiate conditions easier for the Kaiel to meet.

The Stgal were showing no real unity of command in their response. Later that day, rifle over her shoulder, Teenae brought in a delegation of four young Stgal to meet with Gaet. Obliquely they tried to bribe him. Without showing any expression, Gaet replied by offering a counter-bribe. He left the priests won-

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dering whether he was serious or whether he was just roasting their legs.

Gaet laughed. He was enjoying this real-life kolgame. Teenae let him laugh but she busied herself cleaning her rifle, sitting by the brazier, deep in thought.

41

Whosoever insists on winning must play at trivial games; no interesting victory is ever assured.

Dobu of the kembri,
Arimasie ban-Itraiel in "Rewards"

Surely Soebo was the most magnificent city on all of Geta! Casual sightseeing soon bewildered Humility. There were canals, cut at angles through what had once been river delta, distorting her sense of direction. By unfortunate choice she picked as landmarks two look-alike temples whose alternating misappearance turned her around. Finally she worked her way down stone stairs, and hired a guide with a waiting flat-bottomed boat.

Sunset found her in the plaza of the Temple of the Wind watching the gossiping and the chess and the excited antics of a group of iron-ball players. She ate fruit at a table above the crowds, careful to leave the poisonous yellow peel. She chatted, provoked, probed; the sea clan was thought to be invincible, yet there was an undercurrent of hatred.

Against the plaza and the seething power of this city, Hoemei seemed like such a village priest. Because Humility was bewildered by her love for him —alternately rejecting him and returning to him—she wanted him to be wrong so that she could laugh at him and right so that she could love him all the more fiercely.

She spotted a Liethe holding the arm of a white-haired Storm Master as he led her across the plaza. Now there was a powerful man! The slight girl hurried to keep up, and once touched her head to his arm affectionately. Would *she* want *him* to be right? Would she connive ruthlessly to *make* her man right?

Humility's baggage arrived at the Liethe hive long before she did. The hive in Soebo was an old building that had been in Liethe hands since before the first of the se-Tufi line had ever died. Even then it had been old, a stately derelict of the bawdy entertainment district. Now the whores and the theaters and the gaming houses were gone, washed away by shiftings of money that had not left even the hive untouched. Prospering Liethe had built onto their ancient mansion a wing of high towers around a walled garden where once passed a street alive with drunken sailors. Perhaps the ghosts of Vlak seamen still bought orphaned women at auction in the brick theater-of-the-round that was itself a ghost, having been replaced by a public fountain.

Humility was given a tiny tower room and a mat. Moments afterwards she was summoned to the cell of a crone of the nas-Veda line which had been discontinued because of immunological irregularities that appeared in old age.

"Come."

Humility was escorted down to a sealed, sterile room of the hive's genetic workshop where she met the se-Tufi Who Pats Flesh, a youth older than her-

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self but who did not look older. They bowed slightly, giving their recognition gestures.

"You will be sharing Flesh's two men. She carries the persona of the schemer Comfort, who is consort to High Wave Ogar tu'Ama, and the servile persona of Radiance for Winterstorm Master Nie t'Fosal's use. She will be drilling you through the Nine Tier Matrix of Understanding immediately so that you will be ready as her backup in either role by sunrise of the Knave's Oneday. Please strip and don these sterile clothes. The mask, too."

The nas-Veda guided her charges through sealed doors to a hall adjoining a small resin-coated room which she did not let them enter. There were windows. Inside, a young o'Tghalie woman sat, seemingly without control of her eyes or neck or hands.

"Is she mindless, too?" asked Humility sharply.

"Quite. Mnankrei records show she has died and been cremated. We collected her out of curiosity. We have been wondering what the Mnankrei have been doing with these women. They do not use men for this kind of experiment." The nas-Veda crone turned her face toward Flesh. "Now perhaps you can understand why we have assigned you to Winterstorm Master Nie t'Fosal?"

Humility's memory tripped a file. "He is the designer of the deviant underjaw!"

The se-Tufi Who Pats Flesh was pondering the movements of the idiot o'Tghalie girl. They fit nowhere in the intricate map of political intrigue she had been trained to perceive. "Will she recover?"

"No."

"That's horrible. Fosal creates such monsters?" This would be the reason that High Wave Ogar tu'Ama had opposed Fosal at such great cost to himself.

"Fosal is gifted. The horror is not that such men exist; it is that others have allowed such men to rise to power."

"I am consumed with curiosity. How can the o'Tghalie have allowed their woman to be used thusly? A sale is not an open contract."

"They know nothing of what has happened to her, and you will tell them nothing. We have determined in our quiet way that she was sold in faraway Osairin and her clan believes her to be perished of a desert dust storm while she was being carried to the Njarae." The old woman added ominously, "Fosal has used Liethe, too!"

"Mother! And you've given me to him!" exclaimed Flesh.

A hundred thousand wrinkles chuckled. "Humility will share your burden."

Black pupils, embedded in blue and flecked irises, probed each other over the whites of the sterile masks.

"How has she been harmed?" asked Humility.

"You have been taught of the microlife that sometimes rages in stinging scourge of death among the profane? Nie t'Fosal has found ways to bring such profane ills into the sacred world."

"She is *diseased!*" Both se-Tufi spoke with astonishment.

"We are not able to decode the mechanism. We have sampled this girl's

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brain and all appears normal except that axionic and dendritic neural growth is unusually prolific. We believe a double process is involved. Viral constructs, hosted in free invading cells, have been used to play with genetic controllers. Mouth contact can transmit the disease."

Suddenly Humility had a huge attack of loyalty for the Kaiel. How could she have pretended to forget Hoemei! She was his abject servant! "The Kaiel are right to call a Gathering."

The crone swiveled in contempt, gesturing at the demented o'Tghalie. "The Kaiel will be destroyed before they reach Soebo—by that!"

"We must warn them!" cried Humility. "We have our rayvoice contacts!"

"We will *not* warn them," retorted the nas-Veda crone angrily. "With such a frightening thing loose do you think they will spare us? They will deliver a holocaust of flame to this city to roast us all—all of us—in a purifying total fire. All clans will be consumed to char as were the people destroyed when the Kaiel chastized the Arant! Would they see a way to mercy? Would you be merciful if you were they and knew of this horror that might spread from here like poison spores on the wind to every man-inhabited region of Geta? No, Liethe child, you will not warn the Kaiel. I bind you under penalty of death!"

42

Lay a man at your back to listen to the whispering of the wind.

Private poem of Noe maran-Kaiel

The reeking smell of drying weed drifted down from the racks on the cliffs across the beach. The simple docks were busy. Noe expected an imminent Mnankrei sweep of the coast to clean out these carefully placed supply nodes of hers which were putting boats across the upper Njarae to Mnank loaded with goods and, now, with priests from distant clans.

It was Joesai's vulnerability that cast sinister reflections upon every rumor. He fretted amidst the enemy, barely beyond the outer reaches of their city, and he was allowed to do nothing while the Mnankrei day by day readied whatever counterstrike they intended. The prescience of the Kaiel mind told her what it meant. Joesai was doomed, however this adventure might turn out for the Kaiel. Joesai had always carried the aura of death with him. He dared it, lived with it, mocked it, because he could not escape it. He was born to be a tragic hero.

Noe remembered, almost tearfully, the day she had wandered among the hills above Kaiel-hontokae, searching out Joesai she knew not why, to find him glooming over a wrecked sailplane. He put wings on her and risked her life above the valleys, and she had discovered from Joesai that she loved danger and could not live without it.

Noe was approached by a sturdy man from one of the small refugee boats while she was eating bread and honey pudding in the plaza of the village.

"He's a Geiniera," whispered her second companion.

"You know for sure?"

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"Yes. He's been sulking around the village for days, keeping to himself."

The man bowed to Noe. He was ragged but well washed. His eyes shifted suspiciously yet without fear. Deferentially he waited for Noe to speak first.

"May I help you?"

"Now tha' would be pleasant but no' likely. You be Kaiel?"

"We're all Kaiel, guests of the Twbuni who rule Tai."

"You Gather t' shake Soebo?"

"Only that we may know the truth," she replied formally.

"I see the dune, but each grain o' sand is truth." His reply was the gentle rebuff of a practical man who did not believe in such nonsense as truth. Shoulders shrugged that had lifted sails and fought the lashings of the sea. "You question th' folk wha' flee? Did they carry tales as woeful as th' tale on this heart?"

"Are your woes of your own making or cast upon you by the evil deeds of others?"

The Geiniera laughed and slapped his rags. "No' a question I could answer!"

"Share our bread."

"Thank 'e, kind priest. You Gather t' shake Soebo. Go with God's blessing and avenge me my daughter."

Thereupon he told a story that fitted his mad state. He had shared a wife with his brother. They were poor but perhaps could have afforded another woman if they had been able to find her. The wife bore her sailors a daughter and died while they were both at sea, leaving the baby to neighbors. That tragedy changed their lives. One would go forth on a Mnankrei merchantman and the other would stay home to care for the daughter, and perhaps to pick up work in the shipyards or mending sails. The daughter grew to be beautiful and proud, a soul to scorn her Geiniera roots and to love the wealth of her betters. She set her mind to becoming Mnankrei and in time found a man who took her as a lover but, when she was with child, abandoned her to her grief and poverty.

The agitated girl had taken the baby to the Temple of the Raging Seas, into the presence of the father, and murdered his child for him to watch. She had been seized, and no one had ever seen her again. The story told to the Geiniera fathers had been of her invitation to Ritual Suicide. One father believed and one father did not, for should not their daughter have been delivered to them for their rightful Funeral Feast?

He was a persistent man, made wild by the loss of his daughter. He sought to find her fate and found memories of things his daughter had said about her man and dark rumors instead. No wall or door kept him out for he was a ship's smith, and one day, sure that he had found her, he came across a room sealed by glass that he could not enter. Beyond the glass were mindless women whose husks alone had been spared the bliss of death.

Afraid of being found, he retreated. Enraged and broken and deranged by grief he had gone to the house of his daughter's lover to kill him and had found instead a woman of the Liethe who had soothed him and taken his story from him like hair that falls against the smooth run of a honed blade. She asked him urgently to take her to see the husk women and yet when he was there at the appointed meeting place, ready for

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such risky venture, he had been betrayed—eventually escaping.

It had been Kathein, with her sure knack of ferreting out the rule and law of nature from odd happenings, who had taught Noe the secret of a good intelligence procedure. Never meld the incoming data into a general overall summary. Always maintain two lines of report, the optimistic and the pessimistic. One report should weigh the data in terms of the best possible meaning, and the other report should squeeze out of the data the worst possible interpretation. If both reports agreed, the probability of error in the conclusion was small, but if both reports diverged wildly, then cautionary attention had to be given to the negative nuances.

The Geiniera might be a spy planted here to mislead but then what about that other story of masked Mnankrei burning coffins? It fitted. And Noe, who had worked long days on the genetic makeup of the deviant underjaw, had the final unique piece that made sense of it all. If the Mnankrei had spent so much time developing one deadly genetic killer then perhaps they had many.

Noe's home base was a farmhouse rented from a family on pilgrimage to their ancestor's Itraiel domain. Conveniently located near the sea, it was dug into the leeward side of a grassy hill, protected from Njarae storms and hidden from coastal scouts. The roofs were of wood overlain by the thick sod of saw grass. On top of the hill was a rayvoice antenna.

She waited until the stars were out. The rayvoice worked best under such conditions. "Raise Joesai for me," she told her operator. Should she tell Hoemei first? No. He was committed to a fixed plan and would try to hold fast. It was Joesai's life on the blade.

They spoke in code: dots and dashes and warbles because she owned only a portable rayvoice. The code wiped out the personal urgency she felt.

You must act now.

Are you . . . Cackle, splat. *Hoemei will kill me.*

Evidence of sacred disease.

??? Repeat.

Genetically engineered killer microlife.

Verified?

No. No time. Attack. Your whole camp threatened.

Not enough data.

This may be deadly. You may have no choice but to sack Soebo.

??? Repeat.

Burn the place! Raze it! Sterilize it!

Drastic.

Attack! Concentrate on Temple of Raging Seas.

Who is involved?

Any member of the Swift Wind. The Liethe are suspect.

Who?

Three sources point to Liethe involvement.

How much time do I have?

Attack yesterday!

May God be with us.

May God be with you.

43

A man who has been afraid all his life thinks that fear is the only winning strategy because he has been conquered by fear. Thus when an oppressed mind

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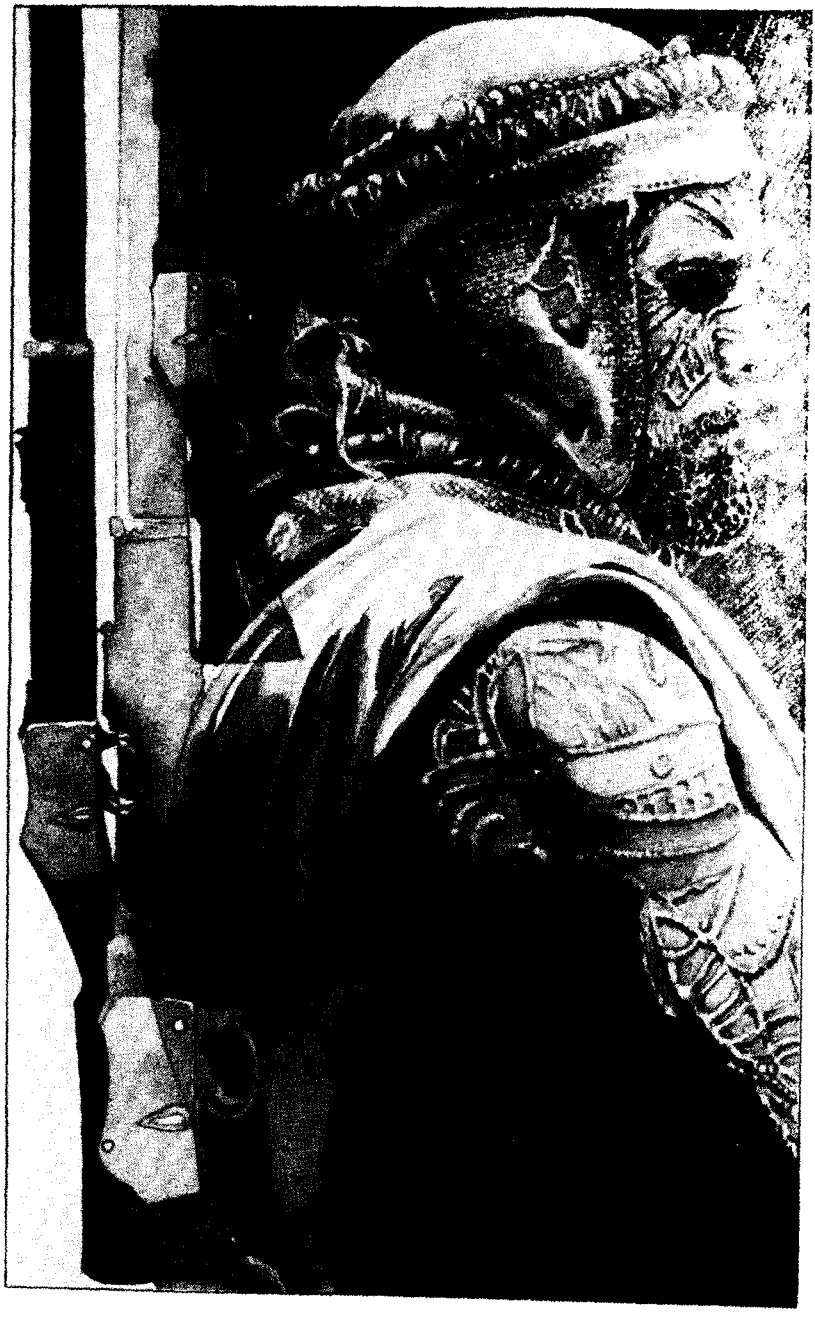

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strikes in rebellion, he becomes the oppressor.

Prime Predictor Tae ran-Kaiel
in "Government"

Winterstorm Master Nie t'Fosal was a man who believed that women who were not afraid of men were dangerous. He beat Radiance for no other reason than to restore the dominance-submissive balance. He did not stop. His rage at her willfulness subsided and still he beat her for pleasure. For days Flesh shook. The crone se-Tufi Who Rings the Soul's Bell, in charge of investigating t'Fosal, thought she could convince her young sister to continue the affair. Flesh refused. The crone argued with guile and cunning. Flesh begged for another assignment, anything, a task no matter how demeaning, anything except to be touched by t'Fosal again. Soul's Bell finally laughed in defeat and called Humility.

"You are to see him tonight."

"But I have not been fitted to the mask of Radiance."

"Flesh will drill you until the high-node sun."

"That is not enough time."

Flesh made a noise of contempt. "He cannot perceive the grossest differences! He'll beat you; that's what you have to know!"

Part of Humility's training had been Kontaing, the art of being beaten without being injured. "I shall need a Shape."

Soul's Bell folded her hands. Her face was inscrutable. "You will have a sharp change in personality due to a beating. You will be afraid, unsure of yourself, desperate to please. You will have found the man you could be willing to die for if he would but ask of you such a sacrifice."

"Is he so insensitive he would believe that?" asked Humility.

"Yes," said the crone.

"How can you bear to be with such an insect!" Flesh stormed with scorn, directed not at her sister but at the man.

"It is my vocation."

"Do not harm him!" warned the old one severely.

"No." The Queen of Life-before-Death bowed submissively. "You have instructions?"

"Yes. Obey him."

A call came from the Temple of the Wind for five dancers to entertain at a feast. They were taken by masked Mnankrei boys to the upper terrace where the walls had been shaped with many slits that spoke in eerie tune with the wind. Humility found that she would be dancing only for males. The Mnankrei women, invisible in the world of pleasure, did not seem to attend their men when they were drinking heavily and speaking loudly.

A veiled crone mother chaperoned her children. She was still almost too young to be a hag, and she was the least of the hive mothers, but she was used to authority. Only once did she slow Humility, indicating with the lightest hand a tall Mnankrei. "Winterstorm Master Nie t'Fosal," whispered her wise voice almost teasingly.

The man I now fear and love for I am Radiance.

She pretended shock to see him here, the smallest gasp, a hair's-breadth widening of eyes, a toe-length withdrawal. She stared at him for a moment of con-

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fused love so that she might have time to fix his face in her mind's file. She saw a broadly muscled giant whose eyebrows were so thick that they were braided into the design of his hair. He said nothing. She bowed, then propelled herself along the terrace into the friendly arm of another Mnankrei who saw her to the stage where the opening dance was to begin.

Her eyes returned to the Winterstorm Master all through the dances. He was a center of power. Soebo would not fall until he fell. Hoemei was a fool to expect a man like that to crumble. It was self-deluded wishing to believe that such a ruthless tyrant was primed to destroy himself! Her estimate of Hoemei was crushed. *Hoemei is only a man, a beloved man, groping in the dark like us all.* Such a thought shook her, made her feel alone, almost as if God had failed to cross His Sky.

When their chaperone led them away from the celebration, Fosal appeared and stood between the frightened Radiance and the others. The older Liethe tried to protect her but the Storm Master furled her sails. Radiance, still frightened of him, but wanting to be with him, aided his kidnapping and the crone was left helpless.

He took her to some male den deep in the Temple and ordered her to bring them all drinks in great crystalline mugs while he played chess with a friend, discussing the Gathering, sometimes seriously, sometimes as a joke. She watched him attack across the board recklessly with his White God and his Priests, penetrating deep into his opponent's squares, leaving his Child exposed. *He's foolish*, she thought, seeing how he could be annihilated.

"I shouldn't have done that," he growled. "Radiance. You've been watching. How do I get out of this scrape?"

You can't. She put an arm around him. "You'll find a way."

His opponent, an older priest with a face which had been half burned away by a fire he had survived, moved his Horse for the kill, covering with the Black Queen, destroying the line of White Farmers. Fosal simply continued his wild attack, having never lost control, and made checkmate in five more moves. It sobered Humility.

He set up the board again. When one of his sons arrived, he ordered Radiance into a pillowed room adjoining the game room so that she might take his son in sex. He had promised her to him.

"But I want you."

"Later. If you please my Beil."

He set out a Farmer in the opening move of the second game. But he did not finish his attack because he was losing and that bored him. He wandered for a while, muttering to himself of plans and strategy, finally pushing through the curtains to stand over his son while he invented bawdy jokes about the helpless humpings of inexperienced youth. He dismissed his son.

"Are you still mad at me?" she asked with a tremble in her voice.

He laughed the universal Getan laugh. "You've been a good slut today. Why should I be angry?"

"I *want* to be good." She ran a finger along his nose, then withdrew in mock fear. He had children but no wives, no permanent female companionship. The

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Liethe had tried to reach him many times before and had never broken through his aloofness, his lack of interest, his active dislike of women. But he was not impotent.

"I like your dancing," he said to make conversation.

"Thank you."

When he was through with her he would not let her go but set her upon a pillow where he could touch her and watch her. "I don't understand why you like me," he said.

"I don't like you; I *love* you."

Impulsively he carried her through the curtains into the game room and ordered all the games to stop. He ordered some music, which was quick to arrive, and then ordered her to dance, which she did. He stared at her, smiling, clapping his hands, drinking whisky when he wasn't clapping. He was too big ever to get drunk. Still, his mind began to wander.

She waved the musicians into a subsiding quietness, a sea calming after a storm. She stopped dancing. He was lost in some aspect of his own world.

"I have to go now," she said quietly.

That roused him. "No, no. You're coming with me."

For a while they simply walked in the city streets, bundled against the wind. Then he led her to a tower apartment where Radiance had never been. "I work here. The thinking work. It's lonely overseeing a city, planning a clan's next move in a wild game for our rightful place. I cook for myself. I do everything myself here," he said proudly, showing her. He took out bread and carved off two big slices and laid a brown spread over them, giving one slice to Humility. That, she supposed, was probably what he meant by "cooking."

"I could move up here. I could help you."

"It's no place for a woman. I don't even have men here. I like to work alone."

"Am I here because you like me?"

"Very much."

"May I stay here?"

He ate half his slice of bread in one bite. That prevented him from answering her immediately. "You can stay for one more sexing; then you have to go. I have too many worries."

"Couldn't I help?"

"What could you do?" he protested, and she knew he had a favor to ask. He was being too mild. She could almost see his muscles tense while he held in his abrasiveness, pleased at her love, for it gave him control, but unwilling to test it with further brutality.

"I can do anything you want. I'm that kind of woman."

"There are things a woman *can't* do."

"What?" she challenged.

"Chase the Kaiel away."

"You're worried about the Gathering, aren't you?"

"They're coming here to burn us all alive."

"That's horrible. I'm frightened. I hear they've been murdering folk all across northern Mnank."

He had undressed and was pouring whisky from a cut glass bottle by a hexagonal window that beamed reddish sunlight over his illustrated body. "The Liethe are priest's women. Am I cor-

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rect?'' It was a statement, not a question.

''Yes.''

''Kaiel?''

''We've always avoided the Kaiel,'' she said truthfully. She paused just long enough for him to tense. She watched the pressure on his whisky glass. ''But yes. Our code would allow us to service the Kaiel.''

''They must be bored to starvation after such walking and their seasick journey across the Njarae. A spice of entertainment might cheer them. They could use a roll on the ground.''

''I wouldn't want to do that.''

He laughed. ''For me you would. If *I* wanted you to.''

''They're the enemy,'' she said with revulsion.

Absently he went to his evaporation cooler and lifted out a small vial, sturdily blown from blue cobalt glass, padded in a basket wrap. ''If this was secretly added to the common meal, they'd all die. It is a poison that grows and can be transmitted from man to man. They'd all die. They'd take it from each other and die.''

''That's not my work.'' She was masking her refusal with tones of irresolution while she spoke but, at the same time, was thinking, *My God, the crones have told me to obey this man.*

''The Kaiel will not admit me to their camp,'' he continued. ''They will welcome you.''

She reached for the vial curiously, holding it by the tips of her fingernails.

''You'll save us all,'' he insisted. ''A whiff of my powder turns a man into an idiot.''

Hoemei's brother was out there waiting impatiently.

''I'll give your Liethe the Palace of Morning as a reward. It's beautiful. Have you ever been in the cupola at dawn?'' He knew the Liethe were for hire.

She smiled wistfully.

''You're a delightful woman today.''

''A thrashing mellows me.''

''Will you do it?''

So that was what he wanted and why he had been almost solicitous. ''Let me think.''

Joesai! Humility remembered how Hoemei had given her to Joesai for the evening, not like t'Fosal had given her to his son, but like a man shares a wife with his beloved husband. She remembered Hoemei's trust. She remembered Joesai's suspicion. He had been funny to love, unused to affection from women and so easily pleased, easily bamboozled, but never wholly willing to forget his mistrust. He told her that his mistrust kept him alive in those few times when trust was fatal. He had known nothing about the transient pleasures of life. He was not used to courtesans. He treated her like a wife, like some beloved. Of all the men she had ever known, that experience had been the most painful. Even Hoemei, who held her in great respect, saw her as a sybarite. Perhaps she had been so touched by Joesai only because she had been so in love with his brother-husband.

''I'll go,'' she said. ''I'm afraid.''

''Just be what you are. I'll show you how to protect yourself.'' It was a naked grin that he fixed upon her.

* * *

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44

He who judges shall be judged in kind, but whomsoever fails to judge for fear of being judged himself shall suffer tyranny.

Prolog to the "Lattice of Evidence"

The cobalt blue vial was cradled by a miniature cushion in a brass goblet that squatted upon the room's side table. The se-Tufi Who Rings the Soul's Bell was smiling at the tiny coal on the end of an incense stick she had just ignited. Humility stood stiffly, formally before her. "You have done well," the old crone said.

"This 'poison' is not clean—for when does the blow stop throbbing?"

"You are reluctant to deliver this death to the Kaiel?"

"I prefer to kill one at a time," said Humility frigidly.

Soul's Bell peeled a fruit, carefully cutting away the deadly parts, and offered a slice to her guest. "You may relax. Please recite the Lattice of Evidence."

Humility did so, by now flawlessly.

"Good. It means nothing to you, of course, but it is like a seed crystal and you will find that much will grow around it in the years that follow. The pressure of events forces us to hurry you. Every Liethe lives out the Code of her stage. For you it is not the Time of Changes, but nevertheless we need you. For the day that follows you shall be a crone. Please undress."

Humility obeyed, not understanding the order, her arms and body moving to remove her garments with their usual grace.

Soul's Bell watched critically. "That is not good enough. Move as if you were old. Move as if the mere act of walking were a Trial of the Spirit." She noted Humility's hesitation without impatience. "Walk as you will during the twilight of your life."

Humility became slow, dignified, her every movement painful yet her bearing too proud to ask for help. Soul's Bell watched her, then gave her a platinum-headed cane. "You are a crone now." She took a thin pencil and other tools and began to draw lines upon Humility's face, shading her jowls, peppering her hair, shading her breasts so that they seemed to sag, aging her as if these flying fingers were the abrasive sands of some time-storm.

Then she dressed Humility in the eccentric luxury of an elder Liethe. "Think as we do. Every action must be seen first in ghost thought that reverberates through the future until it rebounds off its own peculiar distant consequence. Only then make your action real. You are slow. You are deliberate. Your mind is cunning and never in a hurry. You have forgotten nothing of a full life."

And so it was that this young girl, in the mask of wisdom, hobbled into the Deliberation Chamber of the Liethe hive at Soebo in her first initiation to the world of the crone. An old woman, jeweled in nose ring, chanted the nodes of the Lattice of Evidence. Humility first knew then that Winterstorm Master Nie t'Fosal was up against the knife. Each monotonous invocation of a question from the Lattice prompted one or another of eight crones to answer with an accusation and a line of evidence, coded in poetic meter so that every detail of

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the judgment might be remembered with error-correcting exactness. Question and poem were repeated, flowing back and forth among the crones, fixing the memory of an event no Liethe dared commit to paper.

The details of the judgment impressed themselves upon Humility, passing through her mind and finally across her lips until the poetry of t'Fosal's guilt was tied to the Lattice cues like the flowers that give meaning to the trellis.

There were questions upon which no poem budded. Then the discussion ceased to be formal and debate raged. It was said that no clear poem could be composed unless the evidence itself was clear. However long it took, the crones were faithful to the Lattice which methodically exposed the world of sin, event at a time, through the multi-faceted eye of the squat Night Seer, the insect that had become the Getan symbol of justice.

Humility contributed her knowledge of the Kaiel analysis of the underjaw. She told of the blue vial and connected it to the o'Tghalie idiot being studied by the Liethe biologists. The flow of words became formalized, condensed, blunt, then slowly, in a back-and-forth ritual, were forged into poetry.

His crime was against kalothi, the worst of all crimes. He had taken Death as a slave to feed him power, but should not Death serve only the rituals of kalothi? The last rhyme in place, the most omnipotent of Storm Masters was condemned to death by execution. Humility felt aged with tiredness, stumbling from the chamber with her platinum-headed cane.

She could be old, she could think and move with the cunning slowness of age, for she was a trained actress, but the process of the deliberation itself had aged her. The decision could have been made in the time it took for a nod of a head, and yet none of the crones had shown impatience. Only later was she thankful for their stern example. She had once felt superior to the crones who ordered her to kill, and now the killing seemed the simplest of it.

Humility was silent in her tub, waited on by giggling Liethe children, each naked but for a belt and bead skirt, who poured pitchers of warm water over her and ran for more. Soul's Bell scrubbed away the painted age. Sometimes the crones were harsh, and sometimes they were kind to their charges.

"Bear this in mind, little One-Who-Sometimes-Has-Humility: the Storm Master's death will be no ordinary execution. He is the foundation stone of a large building, and does not a building fall when its foundation stone is removed? Perhaps on us. There is an art to such things so that the building falls into a heap and not out into the street. Knowing the nature of the building he supports will guide you. Remember that we do not wish to destroy ourselves."

"Am I to have no help?"

"No. Should you fail we will mourn you at your Ritual Suicide in the Temple of Raging Seas."

"What happens to old assassins?"

Soul's Bell rang with laughter. "They become judges. You know that now."

"Why do we do this?"

"We are aligned with the priests. We rise or fall as they rise and fall. If they become corrupt, will we not be de-

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stroyed with them? The priests must have their checks."

The arrogance of that statement triggered a fury in the young assassin. "And what if *we* become corrupt?" she erupted, raising a tidal wave in her tub.

"Have you not noticed that one in every three Liethe has been replaced in Soebo? I am new here and was not ready for the hasty journey from Hivehome, I assure you. Thank God for the strength of the Ivieth! You are among the newcomers. Why do you think Fosal trusts a Liethe to murder at his command? Are we not the slaves of the Mnankrei?"

Humility was horrified. "I cannot believe the Liethe have lost their center!"

She felt the gentle toweling of the old crone. *She depends on me.* The nakedness of a wet body chilled the Queen of Life-before-Death to the verge of shivers. They were all depending on her to save their skins from both the Mnankrei and the Kaiel. Clans! Did a clan never think beyond itself! The burden was like a padded overcoat of the north, but there was no warmth to it. Was life to be like this, so serious?

Ah, she sighed, while the two breastless Liethe slipped a fluffy cloak around her shoulders. Reverie recalled the simple pleasures of the pillow and the table and the wit of a flirtation and even the thrill of a cunning murder stripped of its overwhelming consequences.

Youth was passing so quickly!

45

You ask why the kolgame allows the violation of its rules? But are not rules subservient to strategy? Once strategy is set, rules, plans, and contracts become variables to be optimized continuously. Such is the way of victory.

From the Temple of Human Destiny's "Games Manual"

A multi-jawed vise was closing on Joesai. During his reluctant idleness, Mnankrei squads had been slowly surrounding him with trenches and checkpoints while Bendaein hosa-Kaiel endlessly found ways to delay the forward deployment of the main strength of the Gathering.

And now came Noe's message that the Mnankrei were ready with a new biological terror to which he *had* to respond . . . except that he was under sacred contract to Hoemei to sit and do nothing. To honor both Hoemei maran-Kaiel, his brother, and Tae ran-Kaiel, his father, and yet to face a situation which neither could have predicted, that was Joesai's dilemma.

His inner self told him to throw everything into a devastating thrust straight at Soebo and damn the consequences! Yet an ironic song from *The Forge of War* replied to temptation, reciting vast French victories on the way to Moscow. The power wielded by Napoleon was absolute, so absolute that it forever deprived France of Glory. Until the very edge of the last impossible page of *The Forge*, Frenchmen were to be seen in hell pursuing a buxom Glory who flirted with taller lovers.

Joesai stared toward Soebo from his farmhouse tower, raking the horizon—a band of haze that blended into the blue sky—restless to move and yet re-

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strained. Victory was essential but could one bargain with the rubble his forces would create? Power was not to be had through transient victory.

Tae had endlessly reminded his clan that the Gathering of Ache achieved domination over the Arant by terror, then created the Kaiel to oversee the terror but, that strong as terror gripped, it was a transient glue. Had not the Arant, decimated and scattered—cowed—nevertheless subdued the Kaiel through the back door of remorse, so that the Kaiel body now walked with a double soul?

Joesai knew that he could strike immediately while his group was still alive. A small band could take Soebo. Who else but he—and perhaps his crazy two-wife Teenae—understood the uses of the madness in *The Forge of War*? The Mnankrei would be able to defend themselves but they would *not* be able to comprehend the battle tactics in time. The victory would be stunning, complete, even awesome, its reward a cowering populace who anticipated every need of the conquering Kaiel.

The victors would be bathed, fed, carried, served, charmed; every order obeyed. Yet the children would be hidden, and who would ever know the thoughts behind the smiling faces trying so anxiously to please? His Arant mind told him how cities responded to fear, and his Kaiel mind showed him the future: a Kaiel body thrown to the stones of a Soebian back alley, stomped, its throat slit, blood flowing between the stones to the gutter; a Kaiel body floating in a canal; a Kaiel body hastily butchered and roasted, its skin destroyed; his body; Teenae's body; his grandson's body.

He shrugged, dismissing his main battle plan. There could be no victory unless the children came to greet you. No children cheered the German troops across the steppes of Russia. No children cheered the Russian butchers in Afghanistan. No children cheered the Amerikan troops at My Lai.

Ordered to stay put, restless for action, Joesai fell to clever temptation—he chose both. He pretended immobility behind his ramparts while sneaking out of camp with ten of his best youths. He would see Soebo and hear its stories with his own ears and play his game there and who would ever know in time?

Within Soebo he spent his first days surreptitiously setting up hideaways and laying out escape routes; his missions were planned backwards. Then he was ready to probe the Liethe. If these mysterious women were evil's accomplices, as Noe suspected, he should be able to wrest from them the clues by which he could gain access to t'Fosal's Swift Wind faction.

He chose direct confrontation. Sentries were stationed along a retreat path over rooftops and into a canal barge. Thus secured he entered the Liethe's Soebo hive in broad daylight to wait in a room of tapestries, idle, amused. A startled girl found him.

"I am High Face of the Advance Court of the Gathering of Outrage." The girl's eyes widened. Women were not used to receiving men here in this sanctuary of women. She fled and was replaced by an elder.

"And I am the se-Tufi Who Rings the Soul's Bell," said the hag. "You

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must tell me the purpose of your intrusion." This one had an iron calmness which could hold either fidelity or treachery.

Joesai remained alert for signs of deceit, for the small flicker of wrinkled face that would tell him she was holding him until others could inform the Mnankrei. "Bell of Supreme Excellence, from Kaiel-hontokae we once contacted you regarding those Kaiel captured at sea by the Mnankrei. We were informed that they languish in the Temple of Raging Seas."

"Ah, and you are here to free them. A difficult task."

Such was not his task. He was using the suggestion of an escape attempt as a test of Liethe intentions. Joesai noted that he was being offered no help. "I realize you are allied with the Mnankrei," he said. "That makes your position delicate. Should the Mnankrei win this game and determine that the Liethe helped us in our failure, then it would go badly for your presence here."

The witch smiled. "You are telling me with your Kaiel tongue that if *the Kaiel* win the game and we do not help you, then events will go badly for us."

With great formality, Joesai countered her thrust. "You are too familiar with the ways of the Mnankrei. Do not compare us. In all ways we are more generous. I make no threats. I cannot ask you to violate the ancient customs of Soebo, established when the Kaiel were but worms. I give Oath on my clan's Gene Pool that no word of any help the Liethe give us shall ever be revealed by us."

After much haggling, the crone made her decision. "I know just the girl for you. The fee will be dismissed since this is a matter between priests. You will like her. The wench's name is Comfort and she is sensual to High Wave Ogar tu'Ama who leads the opposition to the Central Watch of the Swift Wind commanded by t'Fosal. She will know of every move being planned against him and by him. It may serve her purposes to help you." The crone clapped her hands and a child Liethe appeared, listened and then slipped away.

He was led to a room that was meant for no man. Its luxury was eccentric. Lit by an eerie mixture of sunlight and bioluminous glow, satin pillows spilled on the floor overlooking the garden. A platinum globe-swing hung from the ceiling beside a torch rack and a bookcase. Dominating the corner was a great wardrobe made of pressed woven ironreed, inlaid with a lustrous stone. The tapestries were of the finest oz'Numae weave depicting the faery world of the mythical forests of Scowlmoon.

Quietly Comfort emerged from across the garden, carrying a tray of o'ca porcelain. The snouts of the centerpiece steamed with the aroma of herb tea. There were sipping cups for warming the hands and spice cake. She set the tray on a small table and sank to her knees before him.

"How may I serve you?" she addressed his feet.

Instead of asking her to rise he lowered himself onto a pillow beside her. The crone disappeared. *Damn fool Liethe*, he thought while he poured them both some tea, *they never think a man can take care of himself*. She let him serve her, gracefully accepting the unexpected. The face, the delicate body,

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was se-Tufi, like Honey, and that disturbed him. She wore a pink robe of knotty texture tied beneath her breasts, casually, and tiny red jewels in the corner of her eyes. She was dressed for seduction, not talk. Did that mean they were afraid of him?

"Good tea," he said gruffly.

Humility, with the gestures of the Comfort persona, broke a piece of cake and offered the morsel to his mouth.

"You look like someone I know," he said.

Her blue eyes sparkled, black pupils and ruby jewels. "Did you love my sister? I see you wear her token."

"For a moment."

"The city is afraid," she said, reverting to her serious manner.

"Of what?"

"Of you."

"The Advance Court has done nothing."

"That's what makes you so frightening."

"Then you, little one, must be the bravest of all the cowards of Soebo." Some of Noe's teasing ways had rubbed off on Joesai.

"Not yet as brave as you, for my actions still fall short of the foolhardy."

"How might I reduce this fear?"

"Go away."

He laughed the great laugh. "I would rather stroll down the Avenue of Temples and have children rush to bring me flowers and climb upon my shoulders."

"With a face like yours?"

"Perhaps I shall have to be content to terrorize the Temple of Raging Seas."

She sighed. "You wish to free your men from the Temple. That is nearly impossible."

"Ho! Notice that word *nearly*. It savors well upon the tongue. I will need maps of the Temple and of the surrounding buildings."

"You will need more than that," she replied scaldingly.

"The Mnankrei guard that evil place well, I hear."

"It will have to be a job done in the dark as the burrowers eat wood. I need time to think and prepare. I will have a good plan for you by morning for your review. I am competent. Do you have two men, flexible in an emergency, quick to act?"

"Of course."

"I cannot go with you. You may fail and die."

"Do your schemes work?"

"Always. When executed by a woman."

He liked the way she laughed at him. "Why should you be so helpful? Who is fed when the Kaiel are given charity?"

"I am the companion of the tu'Ama who has long fought the blow of the Swift Wind. They must be broken on the reefs. But Ama, just and steadfast as he is, lacks cunning as a leader. He may be broken if *he* does not receive help."

"I'm a dangerous ally for this lover of yours."

She delivered the o'ca cup to the small table with both fury and sadness. "You don't even understand what I'm talking about! What can tu'Ama do? We know that! The Liethe are between crushing forces—the Kaiel and the Swift Wind. I am being thrown at you, at your feet, a gift, so that should you win your

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game there will be a Liethe with you to mellow your revenge.''

46

A wise man acts before God crosses the Constellation of the Knife. When the Knife sets, is it being buried in the earth or in a man's ribs?

From ''The Cynic's Compendium''

Like a golden shape, the Temple of Raging Seas lay atop an ancient volcanic upthrust that had defied the relentless smashing of the Njarae. The huge structure was one of the oldest of the Great Temples on Geta. As such it lacked elegance and height. The masonry was thick, crudely hewn. Built by the chattel children of the early slave-trading Mnankrei, half the awesome beauty of this Adoration of God seemed to belong to the rough tumble of sea-slimed stones crouching in obeisance at its feet.

Joesai did not trust his efficient Comfort, who had put together an interesting plan he could not fault. It was either very workable or it was a trap; thus he had constructed a careful contingency tactic. No one would expect them to retreat over the massive north wall. Explosive charges, laid with a quarryman's skill that night, were in place for a sacrilegious exit. Riflemen, not a part of Comfort's modest exercise, had been artfully stationed to cover such an emergency withdrawal.

In the early morning of the next high day, through the rose-tinted fog that drifted off the sea from the red mouth of an enormous Getasun, four impostors, wearing the ochre and purple-striped robes of Mnankrei Time Wizards, shared the stairway of God's Ascension with scurrying temple priests who clattered past them in wooden-soled shoes.

The bronze doors were done in the theme of a tempest that flung water toward God's Sky. All Getan myths echoed the struggle of kalothi against the leveling forces. Inside the doors Joesai took a moment to admire the simple interior excellence of a vast room that predated the Kaiel. His seemingly casual glance oriented him, relating the structure to maps quickly memorized the previous evening.

A functionary was already waiting for them. The necessary paperwork, an ever-present part of Mnankrei life, had been done, presumably by an excellent forger who had access to secret Swift Wind marks, and they were ushered to a small room on the lower levels which was unlocked for them. Presently unsuspecting acolytes of the Time Wizards began to arrive—to be subdued by a silencing hold and drugged into paralysis by potions provided by Comfort.

Joesai and Eiemeni then exchanged Wizard costume for the dark brown robes of a High Priest of the Inquisition and arrogantly descended into the depths, where again the proper paperwork had been done. One by one the Kaiel prisoners were brought out for ''intensive'' questioning and returned to their cells on stretchers in a state of unconsciousness. Eventually the ''acolytes'' left the Temple with their Time Wizard Masters. Watching them emerge, the forward rifleman relaxed at his hidden post, passing to his rear the sign of the unwon, but conceded, game.

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Robe changes and rehearsed trickery dissolved the group one by one, later allowing the fugitives to assemble undetected at a prearranged canal-front warehouse. Once inside the wooden-beamed hideout, tension broke both among the liberators and those who had expected to make their Contribution as soup bones. The men hugged each other. They grinned their triumph silently, and cuffed Joesai. They loved him. Tears wet their eyes. They kissed the walls and swung upon the log beams.

Unobtrusively Comfort busied herself filling mugs from a keg of mead. She hurried to spread sauce over fresh whole wheat buns as fast as they were devoured, her eyes seldom leaving Joesai. She was wrapped in sturdy travelling clothes, her sleeping mat and essential belongings already tied together in a waiting backpack.

Still wearing his Mnankrei robes for the sheer humor of it, Joesai began to brief his men, exploiting their euphoric sense of immediate loyalty. His attack plan on Soebo was now clear in his mind. Passionately he explained the strategy behind the plan, developing action modules and assigning roles as he went along.

"What drives the resistance against us in Soebo? It is fear of Kaiel ferocity!" He struck the Pose of Lurking Death, then spoke again. "It is old memories of the fate of the Arant!" He tossed his hand and demons sprung from his palm. "It is the remembrance of the fate of the clans who served the Arant!" His hand sliced to his wrist in the symbol of execution.

He continued his oration to an alert audience. "The main strategic thrust of the Advance Court has to be to establish trust among the underclans. We cannot simply try to convince them that it is the Mnankrei who are the ferocious fei flowers of the sea and we the bees who make honey through a steadfast policy of bargaining. Would they believe strangers?"

"No!" roared the unanimous answer to his rhetorical question.

For a moment Joesai moved about the warehouse, mimicking the alienness of the stranger. "Nothing a man lives with daily is ferocious to him. It is the *stranger* who seems ferocious. They will think we lie to gain their favor so that we may have their skins. All logic reaches one conclusion: Without trust, no argument is effective. Trust must be the key word of our strategy.

"What then is trust? Trust is the emotional residue of contracts entered upon and fulfilled. We have no time to make elaborate contracts that must persist weeks or seasons before completion. But we *can* do *one* thing. Human beings innately understand the nature of bargaining and they trust the *bargaining process* wherever it appears, whether from little children or from old enemies. All of you here know how to bargain. That is the Kaiel tradition. So that is what we will use.

"Selected underclan spokesmen have already been contacted. You will meet them covertly. Begin bargaining immediately. Establish the needs of your assigned clan in *detail* by means of the opening of the Tae Bargaining Ritual:

" 'What desired event has failed to happen?'

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" 'What has happened that should not have happened?'

"Thus you will discover their most pressing needs. Match Kaiel strengths against these needs and make your offer. Do it formally. The first offer is to contain no lies, no fantasy, no promises you know the Kaiel cannot keep. Write down their first offer. Then haggle."

He smiled. "Within six sunrises I want the main clans of Soebo to be in awe of Kaiel skill at the bargaining game. They will be impressed. The Mnankrei do not make social contracts by bargain. Do as much as you can before I come again. Do not stop talking! Build a constituency!"

For the first time Joesai introduced the odd phrase "Will of the People" into his exhortations. He had picked it out of *The Forge of War,* thinking that it perfectly expressed Kaiel notions of obtaining the loyalty of the underclans. Was not the function of a hereditary ruling clan to sense the thousand conflicting wills of its people and artfully shape that force into a single Will?

Joesai had found himself bemused by the context in which the People of the Sky had used the phrase. But they never spoke words in simple ways. The Amerikans wrote "Will of the People" into their Constitution to justify slavery as if the Black clan itself had sealed their will to the Greater Will.

Even more peculiar was the use of the phrase by Tsar Lenin. Lenin had been dismayed by increasing losses of Tsarist land to the expanding Capitalist clan. He had been totally outraged by Socialist calls for land redistribution in which former State slaves were to be awarded State farmland they had tilled for generations under the supervision of Tsarist beaurocrats. History demanded that a dynasty which allowed such sedition be replaced by a restorationist dynasty! The Tsar was murdered! Long live the Tsar! Lenin destroyed the Capitalists after his coronation and, conniving from within the Socialist clan, regained all prior authority by the artful liquidation of every Socialist within his realm. He justified, as the Will of the People, the mass slaughter of the peasants who wanted the Tsar's land for themselves. Had not the peasants given the Tsarship to Lenin and therefore was it not their Will when he ordered them massacred?

Joesai had his own rhetoric. "Let bargaining forge from the will of the clans the Will of the People. Then when I return to Soebo shall we not have a new city?"

The Liethe woman followed him out of the old Soebo. She was a brown shadow, indistinguishable from any other traveller. For a while they walked boldly by road in a direction too westerly to be connected with the Gathering. He was impressed with Comfort's strength. She was too small, tiny even, but if he slowed out of sympathy she was soon ahead of him, cautioning him about branches, picking their path. She wilted first, though. Fondly, he took her packsack, and then she was holding onto him. She never complained. He was not sure if she was really tired, or whether she simply wanted an evening alone with him. He would have continued all night but, pleased with an excuse, he found a campsite.

"We'll have Scowlmoon to ourselves," she said, building a small fire.

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She had brought water from a brook and was making broth.

He let her—why fight her need to serve a man?—but to busy himself, unrolled their mats. Her essential things amused him. A comb; a blue vial, probably perfume; eye shadow; the leaves of the olinar, a powerful contraceptive. "Your clan knows the Mnankrei like few others. They are hardly real to me except for a priest who once hung my smallest wife from a yardarm. I was angry for a while."

"Did she survive?"

"Yes, but *he* will not! She never forgives. To this day she reproaches me for acts I cannot remember committing."

"Do you miss her?"

"Yes. She's small, like you."

"Tonight you shall have me at half-moon. You'll forget her for a moment. What will I get in exchange?"

"I spoke too much about bargaining." He tried to read her smile in the darkness. "I'll carry your packsack," he said to make her offer seem casual.

"I want your nose for an amulet," she said to tell him that she was priceless.

Idle fingers picked up a rust-red stone flecked by copper green. "How about a jewel instead?"

She brought him his bowl of broth and kissed his nose. "How about Soebo's Palace of Morning? The cupola at dawn is enough to break a girl's heart."

"And a man's purse!"

"If you promise me the Palace of Morning, I'll dance for you when we reach camp!"

He shook his head and lifted her body into his lap. "No dancing. When we reach camp, we break camp and blister feet toward Soebo."

"There's *always* time for celebration," she replied petulantly. "The world seems less cruel when we've been laughing."

He held back—remembering Noe's patient lessons on how to arouse a woman. He wanted to be better than any Mnankrei lover she had ever known. He listened to her breathing.

"Is marriage like this?" she asked, "holding a man you never want to leave?"

There *was* a celebration when they reached camp with the news of the move on Soebo. The young Kaiel were restless. They were not used to idleness but to the Trials, to winning, to cunning escapes from death; and so the celebration came spontaneously. His strange Liethe taught the Kaiel girls a simple dance that their quick bodies perfected while the boys provided vocal music and enthusiastic clapping.

These youths were too fresh from the creches for Joesai to think of them yet as men and women. He watched the gaiety with affection. Even if they were inept at sea, they were lethal on land. He was proud of them. They called themselves judges. In another age, among the stars, they would have called themselves warriors. Joesai found himself clapping along with the throbbing voices of the choir.

Comfort insisted on providing the recipe for the celebration feast. The camp was being taken down around them but eating was a constant of life to be woven into whatever else was happening. Unable to aid the dismantling, she rushed around, serving the Kaiel,

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seeing that everyone was well fed, making sure that there were no leftovers. Joesai she found busy in the old farmhouse organizing the march and she had to sit beside him and feed him or he would not have bothered. The camp was already asleep, the watches stationed, before he finished.

Comfort had returned to the farmhouse and was waiting to sweeten his mat. When he felt his way down the ladder, tired, ready for oblivion, she massaged him, relaxing the cramps that came from stooping over a torch to do his papers, working his walking muscles with experienced hands, limbering them.

"What's it like to be married?" she asked, returning to her favorite subject.

"Hectic."

"That doesn't tell me anything. Life is hectic."

"Try a few husbands someday and find out."

"No," she said. "I've taken my vows. Who's your favorite wife?"

"The one who is on my pillows."

"Will I do as a substitute?"

"I'm not complaining. You take better care of me than Teenae or Noe ever did."

"Thank you."

"You have a magic about you."

"Why do you stay married? Why don't you just wander from woman to woman? That would make life more interesting."

"Why should beginnings be more interesting than middles or ends? I *know* my wives and husbands. We're the kind of team it takes a lifetime to build. Without them there would be no other women; I would be dead. Beginnings tell you very little. They help you get to the middle."

Comfort sighed with faraway eyes. "I feel so lonely with you. I suppose that's because I haven't known you long enough. I'm not at the middle yet."

He pulled her to him, pleased with the warmth of her small body, feeling less lonely than he had all the while he had been on Mnank. He caressed her. There was nothing he could say that was really appropriate. "A man should not talk to a Liethe of his wives."

"Nonsense," she replied sadly. "I have to know everything."

He wondered why, on the eve of great events, the talk was so trivial—of gossip, of past events, of the shape of breasts, of how much whisky a man could hold before he fell over, of love and loneliness. She had lapsed into silence, words gone from her.

"Hi there," he said.

"I don't want you ever to forget me." She took him then.

It was still dark when fever woke him. He tried to move and couldn't. He could hardly open his eyes. The pale face of Comfort was staring at him. She was fully dressed in her brown travelling robe.

"You're sick," she said.

He tried to move his tongue and it was like moving a mouthful of dough.

"The paralysis isn't part of the sickness. I've poisoned you with the juice of ei-cactus so that you won't be able to kill me for having given all your judges the sickness."

He tried to lunge at her by sheer will and managed only to fall on his own arm and pin it. Ponderous grunting noises came from his mouth.

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She rolled him into a more comfortable position. "I'm sorry. I didn't want to do it. You were not wise to trust me. I arranged the escape of your friends with Nie t'Fosal. So that you would not question me." And she was gone.

He could still think. Thoughts came with an unfamiliar despair. *I've made the last mistake.* He was dead and the Advance Court was dead and Joesai maran-Kaiel was an idiot. Aesoe had won, as usual. Joesai had been a foil to bring out the most deadly counterthrust of the Mnankrei and now they had made it and Bendaein would know what he was up against and respond to that, Bendaein the Cautious. *I've disgraced my family.* He could still cry though he could not wipe the tears from his eyes.

Hoemei had trusted him to wait, and he had grown impatient and gone to the city and brought back the pestilence as a lover. Noe had warned him. Teenae would have shot Comfort at a hundred man-lengths. Gaet would mourn him as he had Sanan—and then go find another husband. Fever began to take the coherence from his mind. Kathein's child, bearing his genes, would give whatever kalothi he possessed one more risky chance but Kathein's face faded into Joesai's image of Oelita—mad with her sudden belief in God. He had driven her to her death and now the Liethe were returning the favor.

Joesai's most horrible loss was that there could be no Funeral Feast. No one would share his flesh. He would be cremated, unclean.

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By Tom Easton

Wave Without A Shore, C. J. Cherryh, DAW, $2.25, 176 pp.
Radix, A.A. Attanasio, Morrow, $15.95 cloth, $8.95 paper, 467 pp.
Oath of Fealty, L. Niven & J. Pournelle, Timescape, $13.95, 323 pp.
In the Hands of Glory, P. Eisenstein, Timescape, $2.50, ? pp.
New Voices #4, G.R.R. Martin, ed., Berkley, $2.25, 262 pp.
Other Stories and . . . The Attack of the Giant Baby, Kit Reed, Berkley, $2.25, 215 pp.
Particle Theory, E. Bryant, Timescape, $2.50, ? pp.
Strange Seas and Shores, A. Davidson, Ace, $2.25, 219 pp.
Tales from the Nightside, C.L. Grant, Arkham House, $11.95, 228 pp.
Dictionary of Literary Biography, Vol. 8: Twentieth-Century American Science Fiction Writers, D. Cowart & T.L. Wymer, eds., Gale Research Co., xxvi + 652 pp. in 2 vols., $124.00.

C.J. Cherryh has done a number of very good books since she arrived among us a few years ago. She has earned an enviable reputation as one of the best and most prolific new writers. She has a marvelous sense of story, a touch for character and color, and the ability to embody in her stories and people messages of some worth. Better yet, the messages are not the same in every book.

Now she has done what may very well be her best book to date: **Wave Without A Shore.** The story concerns a world on which continents (Sartre and Hesse) and towns (Camus and Kierkegaard) are named for existentialist philosophers. Existence is based starkly on the premise that "Man is the measure of all things," that each person creates his or her own reality, and that a superior person is one who can impose his reality on others. The world has aliens too, but they are a part of no one's real-

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ity and hence no one sees them—they are effectively invisible. Those whose realities break down—who either stop believing they make reality or come to see the invisible—become invisible themselves; invisibility is demarked by robes of midnight blue, and anything of that hue is likewise invisible.

The tale is one of massive denial, to use a term invented by our patent sanforizers. Into this frame Cherryh sets two students, Herrin Law (significant name), budding artist, and Waden Jenks, heir to the planet. They argue over whose reality is stronger and agree to use each other. Jenks assassinates his father to take over the government. Law undertakes a monumental sculpture of Jenks that has the effect of unifying disparate realities. Jenks's reaction is the Divine Right of kings throughout history—he forbids Law to surpass his masterwork, and he has his hands smashed to enforce his decree. The upshot is a shattering of the culture and a rebuilding on lines more like those we know:

" ' . . . We'll not do things the way they were; we'll not teach dialectic to shut down minds; we'll not *be* what we were. And I can't stop it. That's what I imagined.'

"Waden's eyes were terrible. Not vacant . . . not following that speculation, gazing into possibilities. 'What do you imagine that *I'll* do?'

" ' I imagine . . . that you'll do things that are natural to this reality. Whatever they are. I can't stop it. You can't. We have no more control, Waden . . . We share this world, and it comes down to that. It has its own momentum and it can't be canceled.' " (p. 166)

Solipsism is a common theme in SF. When it is treated as explicitly as it is here, it is usually played at least partly for laughs, as in Heinlein's classic "All You Zombies," or as an odd or horrifying interpretation of true reality. Never, to my knowledge, has it been handled in Cherryh's way. She has tried to show how it might work as a philosophy put into practice and in conflict with an external reality with which it refuses to mesh. She has expressed the philosopher's frustration—"It's a nifty idea, but it can't really be"—far more explicitly than anyone else.

Shore is thus a very intellectual novel in its theme. It is so in other ways as well. Cherryh set herself a very difficult task in the portrayal of a superior intellect. I had my doubts at first that she could pull it off, and I now think she wasn't entirely successful, but she did come close. In particular, she conveys a key frustration of the highly intelligent—the title says it: if no one understands you, if no one can reflect your ideas or follow your mind, you are a wave without a shore, never cresting, inevitably fading. (And isn't this the reason for Mensa?)

Cherryh also comments on the reception of the artist:

" ' . . . Why are you blind to each other, Herrin Law?' " asks the alien, Sbi.

"He shook his head slowly, not liking where that question led.

" 'Why did they cripple you?'

" 'Because I saw.' " (p. 132)

The artist, she says, who is greeted by a rejecting fury is far more likely to be expressing valuable truths than one who is universally approved. Great art, perhaps, can be recognized by the heat it kindles. I am sympathetic to this view, even though it says great artists are rarer than even the lit profs say. Certainly the bulk of popular culture that passes for art today is not controversial. By this measure there may in fact be *no* true artists in modern SF, or in music, paint-

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ing, sculpture, or mainstream literature. There are controversies, yes, but they seem limited to small cliques; they are sparks, not conflagrations, and they therefore barely count as heat. Certainly they do not warm very many souls.

What does all this imply for a recipe for art? Art, to be art, must generate argument, but the arguments fail to count if they involve only a few fans or critics. To qualify as art, a novel (for instance) must therefore be widely read, and the heat it kindles must warm some significant fraction of the culture for which and in which it was written.

The Great American Novel must therefore be a tale that appeals broadly. It must be gothic, romance, mystery, western, or SF. Or it must be by someone whose name alone will sell a zillion copies. It must be read. And then it must evoke universally strong reactions.

Does anything in the SF canon qualify? There was Wells, of course, and Orwell and Huxley, but since them there may be no one but Heinlein, with his *Stranger In A Strange Land*. Nothing else has been both read widely enough and controversial enough. And I am fully aware that many other books may be more "artistic" works in the conventional sense. So is Cherryh, for Herrin Law's sculpture makes trouble only after it evokes intense personal reactions in its viewers. Perhaps she would agree with the more conventional view that the intensity of these personal reactions—the degree to which personal realities are changed—is more the key to a definition of art. I would be happier with such a definition myself. It is less exclusive and less threatening. Yet the artist, to be an artist, must have vision; he or she must see truths that escape the multitudes; truths which, because they are not commonly recognized, will not be readily accepted. Controversy, I suspect, really must be at least a part of any useful definition of art.

The number of "artists" who agree with this idea at least superficially is vast. Look at the preponderance of sex, violence, and limp watches. Look at what passes so often for the "narrative hook." Look at every "New Wave" in history, marked so conspicuously by loud efforts to convince everyone that the new art is revolutionary.

Writers, good and bad, know other things as well, such as the dictum that the protagonist of a story must change, must grow. Sometimes they combine their knowings, as A.A. Attanasio has done in **Radix.** His protagonist is initially one of the ugliest, most despicable, murderous, self-centered slobs I ever hope to meet, in fiction or life. And in the course of the novel, he becomes a virtual god. Now that is growth. Alone, it is enough to boggle the mind and start arguments about possibility and plausibility.

Radix's world is a future only centuries from now in which civilization as we know it is all but extinct. Earth has entered a zone of radiation beamed from the galactic core; this radiation has the effect of permitting psi powers. It also bears the patterns, or souls, of an alien race that can take human form as the mysterious and hated *voors*. The protagonist, Sumner Kagan, is born into an enclave of civilization, fathers a *voor*-child, and is transformed by prison, labor camp, military training, and desert ordeal into a vehicle for his son's mind. He becomes the only one capable of serving the *voors'* need for a way to make Earth safe for their destiny—the development of a "godmind" that can prepare them to reenter the radiation stream before Earth's orbit removes it from reach. Kagan must therefore con-

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front Earth's own godmind, a product of ancient technology, and cause it to stop thwarting *voor* destiny.

Radix is a big story, enormous, rich with imagination and incident. The author himself says he is "trying to connect the indirections of our violent history with the stupendous potential of our human spirit." Yet it is not entirely successful. It may be too big for its task, painting at too great a length with strokes too broad for reality. Kagan, for instance, begins as a caricature of grossness and evolves at length to a caricature of *Homo superior,* a change that obstinately repels belief. There is an effusiveness of emotion, too, that prompts me to suggest that the story could have been done much more tightly, more compactly. It might then be a story that A.E. van Vogt could have written at the peak of his powers.

Don Moffitt, author of *The Jupiter Theft* a few years ago, gave the book a blurb: "A dazzling first effort." Don lives not far from me, and when I asked him, he said he gave Morrow a whole page of one-liners, saying, "Pick one." He added that the book struck him as overwritten. Clearly, I agree. But it is a first effort, and it *is* dazzling, and if Attanasio ever does another book, we can expect it to be worth our money. If he learns to control the tendency to overdo, it may be even better than this one.

If you have a taste for long books of cosmic significance, you will enjoy *Radix*. It will immerse you in a thoroughly imagined future, give you a sense of mission and victory, and please you. The excesses will not bother you—similar excesses are, after all, quite common, especially in fantasy. Certainly, the book will not bore you.

More to my taste for its leaner prose and cleaner conceptual lines is **Oath of Fealty** by Larry Niven and Jerry Pournelle. I'd love to be able to say it's full of fealty jokes, but I can't. The novel is the story of an arcology, Todos Santos, a massive container for a virtually self-sufficient community set on a burned-out Los Angeles slum. Its police are regarded *by its residents* as public servants, there to aid and protect, and it has no crime of its own. Yet there is crime—outside groups hate and fear Todos Santos as the emblem of a dehumanized future, and terrorists threaten it with bombs. Todos Santos is unified by a fear, a wariness, of the outside world, and its unity becomes explicit when one of its managers activates defenses that kill teenage pranksters he takes to be terrorists. The pranksters intended to make that impression—they carried a box full of sand clearly labelled "Dynamite"—but the manager is jailed. He becomes the center for plots and counterplots, and he stimulates the popularity of a slogan, "Think of it as evolution in action," that well expresses Niven's and Pournelle's (or the *Analog* reader's) attitude toward technological progress.

For all its technophilia, *Oath of Fealty* displays a marked humanism. This humanism has elitist overtones, but there is nothing wrong with that. Meatheads, for all that they walk on two legs and make varied noises with their mouths, are scarcely human. (And don't write to tell me *you're* not a meathead. Who said I said you were?) The future *does* belong to the elite, those who can adapt to a changing environment, and their inheritance of that future *is* evolution in action. This holds when the environmental changes are human-made just as it does when they are natural (climate changes, migrations, etc.). As it happens, those who survive one kind of

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change are likely to be ones who would survive the other. They are adaptable, and adaptability is the best definition I have seen of both evolutionary fitness and intelligence. After all, didn't intelligence evolve as the latest and best way to improve fitness? I speak as both biologist and humanist.

"Think of it as evolution in action." Look for it at the next worldcon on bumper stickers, lapel buttons, and banners. It's a slogan for SF.

Phyllis Eisenstein's latest, **In the Hands of Glory,** is a thoroughly readable and well-worked-out SF adventure. Dia Datlin has been raised to believe that centuries before, when the Stellar Federation dissolved, the 36th Tactical Strike Force chose not to be disbanded, but to come to her world to protect it against outside forces. There it formed an enclave supported by the resident colonists. It kept to itself, barring the colonists from membership, recruiting only its own children, of which she is one. Now there is a rebellion, and she and her lover are shot down over the countryside. He is killed. She is captured, injured, and healed by a very sympathetic doctor. In time, she is recaptured by her own forces and becomes lover and aide to the Patrol's commander. And then she learns things that force her to question the beliefs instilled in her. For instance, she learns that the Patrol did not come to her world benevolently. Not at all. It came as conquering exploiters, and it has a hidden agenda she must stop with the aid of the rebel colonists and their alien allies.

Dia Datlin is that rare thing in SF, a female hero, as opposed to a heroine. She is a crack shot, a top gymnast, highly intelligent, pragmatic, and capable, and no one's sidekick. She owes something to Olympic publicity, I suspect (remember that tiny Russian gymnast?), but if anything that only endears her to us. More cogently, she is a feminist exemplar without the lectures. She shows us how equal a woman may be, even when the males around her remain oppressive. They permit women to have responsibility, even to rule, but they still hold them as sex objects, and Dia is so much more than that.

The colonists receive the worse oppression, and the lectures concern them. Feminism is thus supported at one remove, and oppression and prejudice are attacked at a more basic and general level. Phyllis says everyone should be valued on their merits, that fairness and justice are not matters only of sex or race or ancestry.

How can we argue? It's the rational, humanist ideal, and Phyllis has made of it a good tale. Read it.

According to *Locus,* Berkley has discontinued George R.R. Martin's **New Voices** original anthology, that showcase for the Campbell Award winners. Number 4 in the series may thus be the last one (for all I know, #5 may be in the pipeline), and that's a shame. George has been doing a good job of picking excellent stories from fine writers, and this volume is no exception. There's "M is for the Million Things" from the late Tom Reamy, along with an appreciation of Reamy by Algis Budrys. There's John Varley's "Blue Champagne," a moving tale of the taping of true love, perhaps inspired by Watergate. There's M.A. Foster's "Entertainment," in which people, created as adults, have 13 weeks to establish their appeal as entertainers. There's Arsen Darnay's "The Pilgrimage of Ishten Telen Haragosh," in which an ayatollah meets a revelatory comeuppance. And there's Joan Vinge's "Psiren," in which

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a healed psichotic finds peace of a sort.

One-line story descriptions like the above don't help a lot, do they? They sound like magazine blurbs, but if they entice you to buy the book—or warn you off—they serve their purpose. Just don't be put off by the little inconsistency between the book's cover, which lists P.J. Plauger as one of the contributors, and this review and the table of contents. Plauger ain't really there. Foster is.

What does Berkley think sells best? It wouldn't be true or fair to say Victoria Schochet, once of *Analog*, believes only in schlock. She has Elizabeth A. Lynn on the list, after all, and her own book-mag, the *Berkley Showcase*. But then, there's Kit Reed's collection, **Other Stories and . . . The Attack of the Giant Baby.** The cover shows us a sharp-toothed, diapered infant, mouth agape, holding a broken skyscraper; a humongous plush rhinoceros rests by its knee. According to the story, however, the rhino is merely life-sized, and by the time Oodle-kins could snack on the high-rise's contents, his diaper was a shredded, slimy rag dangling from one toe. He had to be cleaned up with fire hoses.

All right. Even publishers know limits to bad taste, though their writers may not. But this book's cover is a clear appeal to fans of the worst of the late, late, late shows. It says, "Hey all you schlock-lovers! Have another gob!" It doesn't even hint that the story is parody—but then, maybe it couldn't. How *do* you picture the baby that ate New York in a funny way?

Enough kvetching. The title story *is* funny. The rest—moving, tragic, funny, silly, disgusting by turns—are all worth attention too. They are *not* schlock, even if they are packaged that way. And they do demonstrate Kit Reed's own claim, in an *Infinity Cubed #7* (a useful amateur magazine; order from U.T. Box 8445, U.T. Station, Knoxville, TN 37916) interview that she is "interested in fiction that in one way or another tries to get at the way things *are*."

Ed Bryant has a collection out, too. It's **Particle Theory,** and it contains the title story, concerning a writer dying of prostate cancer even as the world prepares to end; "The Thermals of August," a pastoral of gliders and death; "Hayes and the Heterogyne," in which a college student is yanked to a time of biological marvels and returns; "Teeth Marks," a ghost story of sorts; "Shark," in which a brain transplant produces an ultimate predator; "Stone," tribute to Janis Joplin; "Strata," of a highway and rock layers and prehistoric revenants; and more. They're all good to excellent, which we expect from Bryant, and you've seen them in the magazines.

Avram Davidson's new collection is **Strange Seas and Shores.** The stories come from the magazines between 1958 and 1971. My favorite is "Take Wooden Indians," in which a modern sculptor finds fulfillment by travelling back in time to make wooden Indians and disposes neatly of a greedily troublesome brother-in-law. It isn't a great story, but then none of those here calls for that name. Davidson doesn't seem to write that way. What he does do is have fun, and so do his readers. Count on it.

For our last book of fiction this month, I offer you Charles Grant's **Tales From the Nightside,** a collection of horror tales. Firmly based in the world we know, each of Grant's stories becomes horrifying when some ordinary event—the coins handed in at a toll

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booth, a boy in darkness, an empty sleeve, a children's slide, and more—grow shadows. You dwell in sanity until, suddenly, a crack appears in the world's walls and the darkness oozes out.

Stephen King, in a rambling introduction, says he loves Grant's work. Well he might, and well might you too. It has the power of the night, of our primal dark-fear, and it is the sort of thing we see too little of. (This shortage, by the way, is something Grant tries to solve with his *Shadows* anthology series.)

And finally, we have one of those wallet-busters, though hardly a rip-off. Gale has just brought out Volume 8 (in two volumes) of the **Dictionary of Literary Biography: Twentieth-Century American Science Fiction Writers.** It covers 90 writers, from Anderson and Asimov to Vonnegut and Zelazny; it necessarily omits many for reasons of recency or space, but I do wish Cherryh were there. It capsulizes lives and summarizes critical reactions. It offers essays on SF trends (the New Wave and science fantasy), media (art, paperbacks, and films), fandom (conventions and fanzines), and SFWA and its Nebula Awards. It is obviously of great value to scholars and to students boning up for a term paper. But I suspect it may be far more valuable to neophyte writers. They should, of course, read widely in the SF canon, but if they begin by reading these volumes, they may find it easier to avoid cliche and hackery. The 90 critical biographies offer a densely useful, labelled overview of the genre's potentials, contents, and ranges, and they may help a beginner find his or her unique voice, if only by ruling out those that are too closely identified with others.

I'll add that the volumes' level of scholarship seems quite respectable. When it discusses works and people I know, I find little fault.

Urge it on your library. ■

In Times To Come

● We normally think of life as something found in water or air or mud or some other niche on a planet. True, human beings are beginning to be found in other places, but only after a long period of preparation here in our earthly cradle. Could life *evolve* in open space? Well, organic molecules have been found there. . . .

The "space horse," needless to say, is not at all like anything you'd see in the Kentucky Derby. But once discovered, it developed a peculiarly analogous role in the affairs of two starfaring civilizations, one human, one not. Each had its own strengths and weaknesses and therefore a good deal of incentive to cooperate—and sharp enough philosophical differences to make that very difficult. What they needed was something to pull them together—hence the title of "Unitive Factor," our next issue's cover story, by Timothy Zahn.

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brass tacks

Dear Mr. Schmidt:

CLUNK!

In a letter in the 9/81 issue, Craig Spencer pointed out the error of "falling" from the axis of a rotating habitat. Alas, authors Bischoff and Monteleone, in *Dragonstar* in the same issue, seriously flawed an otherwise entertaining and believable story with some even more glaring technical blunders that also relate to the nature of rotational "gravity."

When the exploration team "lands" on the hull of the artifact and enters the airlock, we're told repeatedly (pp. 48-52) that they are in free-fall: the lander ship "drifts" "down," the people "float" to the hull and in and out of the airlock. But we know that the thing is rotating so as to create a centrifugal pseudogravity inside. The team has by now matched velocity with the hull, so if they're really in free-fall, they're being flung out the open hatch by the rotation! The lander and they would need a constant acceleration toward the hull (the artifact seems to have 1-gee simulated gravity) to stay where they are relative to the cylinder. The team would have to *climb up* into the airlock.

On p. 52 they "float" again into the corridor leading to the interior, but then on the same page, suddenly, "The corridor, under the influence of *Artifact One*'s artificial gravity, appeared to be going straight 'up'."

We also learn earlier that the cylinder is tumbling end-for-end. But with its length of 321 km (as we are also told), it would take very slight tumbling rotation indeed to cause all that marshy soil inside, together with dinosaurs, Jurassic trees, and all, to slide down to either end, except for a narrow band near the center of the cylinder.

Speaking of the cylinder's size, Copernicus Base (p. 39) asked the first re-

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connaissance team to "accelerate to 500 klicks a second and continue longitudinal course." Just how much information could they possibly gather in the six tenths of a second it would take them to zip from one end of the artifact to the other at that speed?

In reading fiction, one must apply some "suspension of disbelief" in overlooking occasional physical impossibilities and contradictions. But really—when the bloopers reach this magnitude, they really get in the way of one's ability to enjoy the story for its own sake. These sorts of errors are easily correctable before publication. If your authors don't catch their own technical clunkers, isn't it your job to do so? I feel your general choice of reading material for *Analog* has improved lately; I've changed my mind about dropping my subscription. But the magazine suffers when these errors get by you.

Sincerely,

PETER J. BENSON

7441 Stoney Ridge Rd.
Marriottsville, MD 21104

Okay, so maybe "floated" wasn't the best choice of words, but there were enough direct or indirect references that it should have been reasonably clear that this "floating" was done with power assist and there was *centrifugal gravity even outside the cylinder. What do you think all those magnetic seals and boots were for? And they* did *have to climb up into the airlock!*

For your other points, see the next letter. . . .

Dear Dr. Schmidt:

The new serial *Dragonstar* (September) looks to have possibilities, but you ought to check the physics more closely!

In particular, the "cylinder" is both spinning **AND** tumbling! Indeed! ! It might be precessing, but not spinning and tumbling at the same time . . . that's unstable.

The velocity of a point on a rotating object is $V = 2\pi R / T$, where T is the period of rotation; the acceleration (G-force) is:

$$a = \frac{V^2}{R} = \frac{4\pi^2 R}{T^2}$$

$$1\ G = 980\ \frac{cm}{sec^2}$$

Now, the radius of the cylinder is specified as 3.2×10^6 cm; we get the (implied) 1 G at a spin period of 6 minutes—360 seconds per go-roundie. However, if it's also tumbling about its center, what G force occurs at the ends? Tumbling at 1 rotation / hour, and with $R = 16 \times 10^6$ cm, we can compute an acceleration of 1 / 20 G . . . that's not too bad.

However, the story implies that 1 hour's observation is sufficient to detect the periodicity of rotation (via reflected flashes). You need a minimum of 3 events to verify periodicity, and the story suggests that more than 3 were required. Let's assume that 6 events were observed, for a duration of 1 hour—5 periods: that's 12 minutes / go-roundie. Oops—we're up to 1.25 Gs. I think that the swamp would have drained.

I won't belabor the question of "hanging from the ceiling" while getting the airlock open, let alone "landing" under those conditions, or of accelerating from 100 Km/HOUR (p. 37) to 500 Km/SEC (p. 39)! Even if we use the figure of 5.3 Km/sec (p. 35), that's a lot of Gs.

You should be able to catch simple errors of this nature, and not inflict them on us. If you had told me that the front of the ship was faceted, and the light

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was reflecting from the facets as the ship spun, I could accept that: but TUMBLING?

JOHN KOPF

21850 San Fernando Ave.
Cupertino, CA 95014

P.S. While we're about it, could you jump on authors who refer to a "great leap forward" as a "Quantum Jump" of knowledge? A quantum jump is the smallest DETECTABLE difference between two states!

Of course it's not both spinning and tumbling, and nobody said it was. If you look again (carefully!) you'll see the tumbling motion was the first guess, before anybody got a close look at the thing, because it provided the simplest explanation of the flashes. Later, when they did get a close look, it turned out to be not tumbling, but spinning on its axis, and the flashes came from reflections on parts of the surface (which, you will note, means that "one flash" does not necessarily equate to "one revolution").

I'll grant you that the 500 Km/sec is a mistake—a typo that didn't get caught at some point, but nothing more or less than that. We don't catch everything —we're human and busy—but we caught more than you give us credit for.

On that P.S., I don't think you quite understand what "quantum jump" means. It has nothing whatever to do with the size *of the jump; it can be big or little. Its real significance is that it's a* discontinuous *jump between two discrete states of a system which can exist only in certain discrete states and nothing in between—and in that sense it's often an* excellent *metaphor.*

Dear Mr. Schmidt,

I must point out that Somtow Sucharitkul has surreptitiously inserted a sub-plot in "Absent Thee From Felicity Awhile" (August 1981). The story must unfold in an alternate universe, one with a different transportation history. In our time-line, New York's Pennsylvania Station (what's left of it) is the place to entrain for Philadelphia; Grand Central can only point you north.

A more obvious hint might be in order for future stories. Perhaps on the order of a Maxwell through the store window or Purple cabs . . . ?

Not quite sincerely,

BOB ISHAM

Somerville, NJ

Not necessarily a different time-line—maybe just a little farther up this one. There has been talk lately of building a direct rail link between Grand Central and Penn Station. . . .

Dear Stan:

I enjoyed the great yarn "Gift of Fire" by Steven Gould (July 1981), especially since the author was so meticulous in documenting the effects of enhanced solar radiation shining through the penthouse windows. A nifty story, but alas, fatally flawed by the inexorable laws of physics.

On the last two pages of the story, we are given the pertinent parameters: The collecting area of the mirrors is $2000m^2$ and this is focussed into $4m^2$. The concentrating windows of the MacDonald Towers are 1.5 km from Tapager's penthouse. Now at the end of October with the sun at -12° declination, it turns out that the maximum intensity of solar illumination on a south-facing vertical wall at 35° N latitude occurs at noon, and the intensity is 0.53 of the sun's extra-atmospheric intensity of 1.4×10^6 ergs/cm^{2}sec. The factor of 0.53 is product of one air mass extinction (0.90), extinction of 0.81 for zenith distance of 47° of the sun, and 0.73 for a vertical wall intercepting light

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at 47° angle. So the whole MacDonald tower of 2000m² of mirror surface collects a total of 1.48×10^{13} ergs/sec. All this energy is concentrated, as the story goes, into 4m², for an intensity of enhanced solar flux of 3.7×10^{8} erg/cm²sec. according to the Stefan-Boltzmann equation (1-A) $F = \sigma T^4$, where A is albedo, F is the flux, σ is S-B constant and T is degrees Kelvin, with this flux on a perfect black body (A = O) the effective temperature is 1600K or 1327C, hot enough to melt silver, but not glass. But since glass is transparent anyway (the sunlight shone through Tapager's windows, after all) the glass cannot get hot anyway. Can the silver plateware get this hot? It is hard to imagine black silverware at Tapager's table, rather one imagines reflectivity or albedo of 90%, and the effective temperature (from the S-B equation) reduces to 900K or 627C, insufficient to melt the silverware, let alone vaporize it. So while wood would char or burn, and people would get burned, there would be no melted silver or glass.

But the situation is not even this bad, because a law of optics prevents pushing all the reflected light into a 4m² opening. Each reflecting mirror is analogous to a pinhole camera, and the size of the image of the sun cast by a mirror depends on the distance between the mirror and the surface receiving the reflected light. This can be demonstrated by taking a pocket mirror and reflecting sunlight onto a wall or house. The image is spherical and gets larger as one moves away from the wall. At a distance of 1.5 km, the image of the sun is 13m in diameter, for an area of 133m². So if all the mirrors in the MacDonald Tower superimposed their images in one place, they would concentrate the sunlight into this 133m² area, of which the penthouse accepted 4m², or 0.030 of the amount reflected off the tower. The intensity drops to 1.1×10^{7} ergs/cm²sec. so that a black body reaches an effective temperature of 665K(392C) and the silverware 374K or 101C. So the silverware ends up as hot as boiling water, the glassware hardly warms up, and the woodwork probably chars or burns depending on the length of time the sun is concentrated on the dark wood. Would this kill humans exposed to the radiation? It seems as though fatal burns are likely for those directly exposed, but anyone in shadow should have a chance to escape. Furthermore, any woodwork around the outside of the windows should char or burn, contrary to the description in the story.

This was indeed a novel use for solar energy, but MacDonald Towers is not quite the best way to zap people. I think I preferred the laser hypothesis.

GODFREY SILL

Tucson, AZ

Actually, it's even more complicated than you've described, because (among other things) the form of the Stefan-Boltzmann equation you've used implies purely radiative transfer to surroundings at absolute zero. The actual surroundings were well above absolute zero; they also included materials which would block radiation and conduct poorly. Both of these facts would tend to make the resulting temperature higher than your estimate—but whether it would be enough *higher is doubtful. You may have a point—and the resolution question certainly deserves a closer look.*

Dear Stanley:

You wrote an editorial (May 1981) deploring bosses who pass over competent applicants and hire second-raters—with proper credentials. Tsk. Surely you accept the principle that "the boss is always right." That is an un-

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derpinning belief of our current civilization. Specifically, if a person has been a boot-licker/party toy for twenty years, then that person has a right to hire a boot-licker/party toy (with proper credentials, of course). Of course, perhaps you are confusing our fathers with ourselves.

Throughout history, the competent person has been a pariah—loathed, despised. The only times the people of a group tolerated competent leaders were

1. When they were losing a war (and even then, often preferred defeat).
2. When they were conquering a very hostile frontier (fools tend to be smart enough to keep their mouths shut—or they die).
3. In free-for-all capitalism (another kind of frontier).

I think a careful reading of history will show that competent men are not welcome except in the above situations, and even then only tolerated. You perhaps looked at this country in the period 1775-1914 and confused a transition period with steady state. Of course competence does lead to great states and power.

Anyone want to look ahead to 2055 and bet that Israel won't be THE major world power?

Seriously, Stan, you raise interesting questions, but you don't have the theory or mathematics to say if this is really a problem or, if so, why and how. One of your predecessors proposed we write a Constitution for Utopia. He, too, never established the basic laws of human existence and therefore could only display interesting scenarios rather than logically derive an effective Utopia. We now have that basic theory and the mathematics, too. Why don't we teach and use them?

RICHARD WOLF

Redondo Beach, CA

We do? The trouble with psychology, sociology, economics, and the other "social sciences" is that the systems are so complicated (i.e., have so many interacting variables) that to my knowledge nobody has *managed to concoct a quantitative formulation which either fits the facts accurately or is mathematically tractable. If somebody has, I'd be very interested in hearing about it.*

Dear Mr. Schmidt,

Your May editorial about credentials really struck home. Just recently I was embroiled in a credentials problem with my Girl Scout troop. I wanted to teach them canoeing. I have several years of whitewater canoe racing behind me, and frequently take canoeing vacations with my husband. However, since I don't have a Red Cross certificate to prove I know what I know, I am not allowed to teach canoeing.

I would like to agree with your proposal to abolish degree requirements. There are certainly plenty of incompetent holders of Teaching Certificates around, and I suspect there are incompetent paper-qualified people in plenty of other fields as well. I have a suggestion for a school system replacement.

Why not substitute student exams for teacher exams? Let the test of the teacher be the performance of his/her students on standardized national tests. If the students gain less than a year's worth of knowledge, pay the teacher that much less than a year's salary. If they learn more in a year than they are "supposed" to, pay a bonus. It might be interesting to see how much "dumb" kids could learn with a properly motivated teacher.

Certainly some children are smarter than others, but look at the way the sys-

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tem works now. The beginning teachers get the slum schools and the heads of departments teach the brightest and best. Beginning teachers also get paid less than heads of departments. The system would not be so very different, except that the teacher would have cash incentive to get students to work.

All students would, naturally, be tested at the start and end of the school year. The teacher who received students at 2.5 grade competence and got them up to 3.5 would get full pay, where the teacher who started with students at 3.1 and only boosted them to 3.9 would take a cut. There would have to be all kinds of precautions against cheating, of course, but the College Boards manage adequately—it could be done.

Granted, some students are better test-takers than others, but over whole classes it ought to average out.

The results should be interesting.

Of course, this system still leaves us stuck with tests—but I can't think of any way to eliminate tests in a school system. What we ought to be doing is concentrating on the *kinds* of tests. Offer students the option of writing a research paper rather than taking a final exam, perhaps. Or taking an unknown substance and determining what it is in a lab, or making a speech, or figuring batting averages for an entire baseball team, or something.

One of my friends is presently trying to document three years of running her own business in terms of "life credits" in order to get an MBA. A progressive local college is willing to award degrees to people based on their experience, provided they can document it. (The college provided samples of acceptable documentation.) My friend will probably have to take some courses to fill in the chinks, but she should get about 100 credits. After all, she spent three years and a chunk of money on the business—it'd be odd if she hadn't learned as much as if she'd spent the same three years and money in school! Nothing beats real experience. It is my fond hope that other colleges will follow this example.

It is also my fond hope that employers will follow this example. Good help is always hard to find—you'd think businesses would be willing to spend a little extra trouble looking in order to come up with good employees. If colleges lead the way and make it respectable, maybe they will.

ANN KNUDSON

Lisbon, ND

Dear Stan,

On 4 October 1982 it will be 25 years since the human race took its first small step into space and out of the cradle of its infancy—Earth.

This momentous occasion should be a day of great celebration. I therefore urge you to support the move to have 4 October declared as International Space Day.

JAN HOWARD FINDER

Latham, NY

Consider it supported. Interested readers would do well to write to the appropriate parties. ■

● It does not take long in terms of human history to *devise* a tool that soon becomes widespread. What takes time is learning the different contexts into which the tool can be fitted.

Jerome S. Bruner

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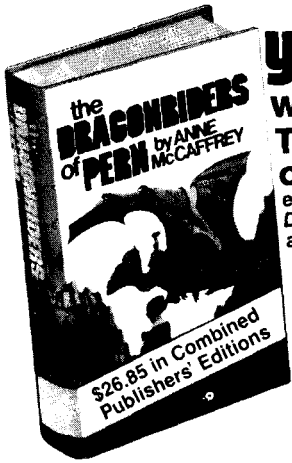

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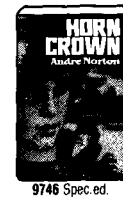

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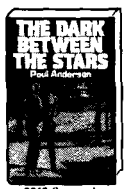

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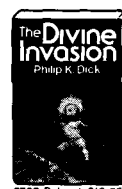

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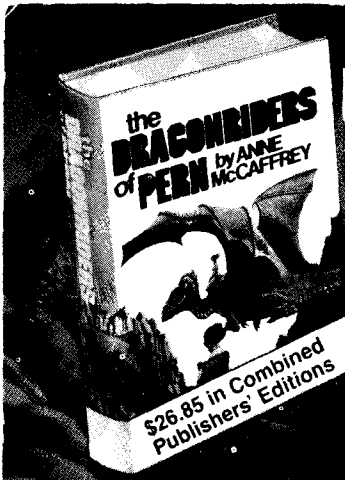

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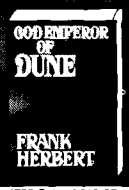

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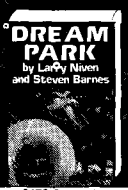

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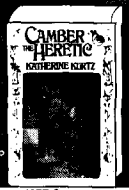

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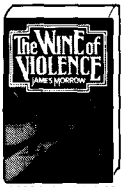

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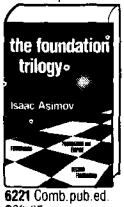

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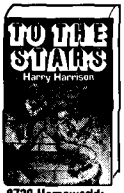

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